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A REVISION OF *ACACIA* MILL. IN QUEENSLAND

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* To be published in *Austrobaileya* 1 (3).

Summary

Bentham's classification of *Acacia* with six series has usually been followed, with minor modifications. Recent studies in the chemistry of the heartwood, morphology of pollen and seedlings, and several taximetric studies have resulted in re-appraisals of Bentham's classification. Three subgenera with ten sections are recognised here. Of these sections *Alatae* (Benth.) Pedley and *Lycopodiifoliae* Pedley are new, and the names *Spiciflorae* DC. and *Phyllodineae* DC. replace the more familiar *Vulgares* (Benth.) Taub. and *Uninerves* (Benth.) Maiden & Betche respectively. Lectotypes for some infrageneric taxa are chosen.

Characters useful in identification and classification are discussed. The arrangement of phyllodes, their shape, size, venation, indumentum and the position and structure of their glands enable a large proportion of species to be identified. The succession of bipinnate seedling leaves and their retention on older plants are discussed and it is suggested that the *Botrycephalae* and the Racemosae group of the *Phyllodineae* are related. Juvenile phyllodes of some species differ markedly from those of mature plants and some species retain them throughout their lives. The nature of the inflorescence (heads or spikes) and their arrangement are useful in defining groups of related species. Flowers show little variation in size and structure and are of limited value in classification and identification. Flower colour is more or less constant for each species. There is a great diversity of pods though only one-fifth of specimens examined included pods.

Delimitation of species is discussed briefly. Naturally occurring hybrids are rare. Most species have a diploid complement of 26 chromosomes. Polyploids are more common in subg. *Acacia* than they are in other subgenera.

Acacias are scarce or absent only in rainforest and grassland. Edaphic factors determine the ranges of many species. Most favour coarse-textured well-drained soils, but some wide-ranging, economically important species are confined to clays. Others are associated with deeply weathered rocks on scarps. Regeneration of most species is from seed, particularly after fires, but *A. harpophylla* and *A. argyrodendron* sucker from the roots. Their seeds lack an impervious testa. The abundance and geographic ranges of some species have been affected by man's activities. Though data are lacking dispersal by animals is probably insignificant.

A key to the identification of 234 species and descriptions, essential synonymy, citation of some specimens, and notes on distribution, ecology and taxonomy for all species are given. *A. nilotica* (Asia), *A. baileyana, A. decurrens* (south-eastern Australia) and *A. saligna* (Western Australia) are naturalized. Taxa described as new are: *A. ditricha* (subg. *Acacia*); *A. jackesiana, A. spania, A. striatifolia, A. tenuinervis, A. hyaloneura, A. longispicata* subsp. *velutina, A. oligophleba, A. leiocalyx* subsp. *herveyensis, A. crassa* subsp. *longicoma, A. grandifolia,* (*Juliflorae*); *A. microcephala, A. maranoensis, A. ammophila, A. melvillei, A. melleodora, A. excelsa* subsp. *angusta, A. fleckeri, A. hyalonoma, A. legnota, A. leptoloba* (*Plurinerves*); *A. johnsonii, A. islana, A. burbidgeae, A. tindaleae, A. hockingsii, A. lauta, A. calantha, A. deuteroneura, A. everistii, A. holotricha, A. polifolia, A. buxifolia* subsp. *pubiflora* (*Phyllodineae*); and *A. albizoides* (subg. *Aculeiferum*). *A. caroleae* (*Juliflorae*), *A. ixodes* and *A. perangusta* (*Phyllodineae*) are new species based on *A. doratoxylon* var. *angustifolia, A. gnidium* var. *latifolia,* and *A. fimbriata* var. *perangusta* respectively.

Acknowledgements, bibliography and an index to collections in the Queensland Herbarium (BRI) are given.

This paper is to be published in two parts. The first part deals with the 140 species of the sections *Juliflorae, Plurinerves* and *Lycopodiifoliae*. The rest of the paper will be published in part 3 of Austrobaileya Vol. 1.

Classification

A discussion of the classification of the genus *Acacia* after its formal recognition by Philip Miller (1754) was given by Ross (1973) and will not be repeated. Despite Ross's statement to the contrary, de Candolle (1825) did provide names for each of the four sections of the genus that he recognised and some of these must in fact be used in place of some generally used ones which were proposed later by Bentham.

Bentham (1842) largely disregarded de Candolle's classification when he published his more detailed one which has become the basis of most subsequent classifications. Bentham recognised six series which are still accepted by most taxonomists as major subdivisions of the genus, though there has been some disagreement as to the appropriate rank of the subdivisions. Bentham (1855) and Mueller (1859) followed Bentham's earlier scheme, but in his treatment of the Australian species, Bentham (1864) modified it slightly. Some of the subseries of the series *Phyllodinae* were raised to the rank of series and the series *Phyllodineae* became the "division" *Phyllodineae.* I regard this and the equally ranking "division" *Bipinnatae* as sections. Bentham also described new subseries. The names of some of these are illegitimate.

Bentham (1875) again classified *Acacia.* He reduced the section *Phyllodineae* to the rank of series and the series included in it to subseries. The other series remained as before; and in fact Bentham's classification of 1875 was a return to his classification of 1842 with the addition of some subdivisions of those subseries included in the series *Phyllodineae.* Bentham's low ranking of the major subdivisions of *Acacia* is surprising. It is partly explained by his note that, though they appeared to have the same importance as the subgenera of *Mimosa, Pithecellobium* and others, and although distinguished by vegetative characters, they were, for systemic purposes, under the rules usually followed, treated as series only.

Mueller (1889) slightly modified Bentham's 1864 classification by placing subseries *Spicatae* in the series *Juliflorae.* Taubert (1894) used Bentham's 1875 classification except that he raised Bentham's series to sectional rank. I have treated Taubert's subdivisions of the sections as subsections.

Since Taubert, no one has attempted to deal with the whole of *Acacia.* Britton and Rose (1928) using characters of the pod referred the American species to a number of genera. Segregate genera had already been described by Wright and Arnott, Link, Rafinesque and others (for references see Hutchinson 1964).

It is significant that Australian workers have followed Bentham with little modification. Maiden and Betche (1916) agreed with Mueller and placed all phyllodinous species with spicate inflorescences in the *Juliflorae,* though the placing there of *A. dorothea* is doubtful. Bailey (1900), Gardner (1930) and Ewart (1930) all adopted Bentham's classification, as did Black (1924) though he recognised only three series.

Newman (1932a) objected to existing classification as being "too static" and proposed a classification which he did not develop in any subsequent publication. It was based on "inflorescences" (inflorescences in racemes, clustered or single), "flower groups" (flowers in cylindrical spikes, oblong spikes, or in globular heads), and "foliar types" (true leaves, petioles without laminae in the adult, and leaves completely absent). From the small number of species listed by Newman it seems that he regarded *Acacia undulifolia* (=*A. uncinata*) as being more closely related to *A. farnesiana* and *A. bidwillii* than to *A. buxifolia* and *A. penninervis.* Such a classification is hardly worthy of serious consideration.

Recent work on *Acacia,* particularly the chemistry of the flavenoid components of the heart-wood, the pollen and the development of seedlings, has led to a reassessment of the classification of Bentham. As Tindale and Roux (1969) remarked, Bentham's classification has stood the test of time. This may not be suitable criterion for assessing the classifications of taxa of interest to only

a few workers, but it is valid in *Acacia* which is of considerable ecological and economic importance in Africa and Australia. It is significant that Mueller, Maiden, Black and Gardner, taxonomists with a considerable knowledge of Australian species, proposed only minor modifications of the classification of *Acacia* published by Bentham in 1842. It may be equally significant however that African workers such as Brenan (1959), Dale and Greenway (1961) and Ross (1971) did not use a formal infrageneric classification, though Ross (1973) has more recently endorsed Bentham's major subdivisions.

Studies of the Australian species of *Acacia* by Clarke-Lewis and Dainis (1967), Clarke-Lewis and Porter (1972) and Tindale and Roux (1969, 1974) showed the hydroxylation patterns of flavonoids of the heartwood to be correlated with the broad subdivisions of the genus. Tindale and Roux who presented data on almost 300 species and found that flavonoids with pyrogallol (7, 8-hydroxy) A-ring nuclei occur almost exclusively in species of subsections of the *Plurinerves* and *Juliflorae,* while the resorcinol (7-hydroxy) A-ring analogues are similarly represented in the *Brunioideae,* subsect. *Racemosae* of the *Uninerves* and the *Botrycephalae.* Individual representation of both hydroxylation patterns or their mixtures are present among the *Continuae,* and under many subsections of the *Pungentes, Calamiformes* and *Uninerves.* Peltogynoids were isolated from the heartwoods of *A. peuce, A. carnei* and *A. crombiei.* On the assumption that 8-hydroxylation or 8-methoxylation of the resorcinol-type (7-hydroxy) flavonoids to form pyrogallol-type (7, 8-hydroxy) compounds was an evolutionary advance, Tindale and Roux considered the *Botrycephalae* and the subsection *Racemosae* of the *Uninerves* (with the exception of *A. salicina, A. ligulata* and few other apparently related species) to be primitive and the *Juliflorae* the most advanced. Eastern Australia was considered to be the centre of origin of the Australian species of *Acacia.*

The presence of flavonoids of both 7-hydroxy and 7,8-hydroxy types in such widespread juliflorous species as *A. ancistrocarpa, A. difficilis, A. holosericea, A. humifusa, A. leptocarpa, A. leptostachya, A. tenuissima, A. torulosa,* and others suggests that an equally likely hypothesis is that both 7- and 7,8-hydroxy flavonoids are present in less advanced species and that species with only 7-hydroxy or 7,8-hydroxy types were derived from these. In this case the subsection *Racemosae* of the *Uninerves* and the *Botrycephalae* could be regarded as advanced. It would also be unnecessary to postulate, however tentatively, that the *Gummiferae* were derived from the *Botrycephalae.*

The distribution of free amino acids in the seeds of 106 species of *Acacia* (Evans *et al.* 1977) confirms Vassal's division of the genus (see below) into three subgenera, with *Acueliferum* and *Heterophyllum* appearing to be more closely allied to each other than they do to subg. *Acacia.* The amino-acid patterns suggest that of the extra-Australian species previously referred to *Heterophyllum* (Pedley 1975), *A. heterophylla* agrees with other species of the subgenus, whereas *A. confusa* and *A. kauiensis* could be placed in *Aculeiferum.*

The distribution of other compounds within the genus could also yield information on relationships. Kjaer (1966) noted that evil smelling compounds, usually considered to be thiols or sulphides, have been detected in several species of the Mimosaceae. He considered it doubtful that such low molecular weight, volatile compounds are truly plant constituents, but are probably formed by degradations of mainly unknown precursors. They are detectable in extremely

low concentrations and have been noted in *Acacia*. The flowers of *A. cambagei* have an unpleasant onion-like odour (Everist 1969). I have detected similar odours in the flowers of *A. harpophylla* and in the bruised roots of *A. baeuerlenii, A. farnesiana, A. pravissima* and *A. salicina.*

Vassal (1972) used characters of seeds and seedlings, as well as the occurrence of stipular spines and attributes of the pollen in devising another classification. Bentham had already used the presence of stipular spines in defining the series *Gummiferae* and Guinet (1969) had shown Bentham's six series could be arranged in groups in accord with pollen of the three types recognised, so that in fact Vassal's and Bentham's classifications are broadly compatible. The low rank of Bentham's groups, mentioned above, was overcome by Vassal who described subgenera, using characters not known for many species or not readily apparent on herbarium material. It is fortunate that they correspond to groups of Bentham's series. Bearing in mind Pryor and Johnson's (1971) observation that anyone is at liberty to use a name with any circumscription he chooses, so long as the nomenclatural type is included, I have brought the taxa below the rank of subgenus described by Vassal into line with Bentham's classification which, at least in its upper ranks, appears to be both practical and "natural". Vassal accepted *Faidherbia,* a monotypic genus based on *Acacia albida* which Guinet found to have anomalous pollen.

Johnson (1973) used some multivariable statistical methods to analyse 37 attributes recorded on 107 species (98 of which occur in Queensland) of phyllodinous *Acacia*. The data were adapted from information derived from the descriptions of species in this paper and in Pedley (1975). Johnson compared the results of his analyses with the classification of Bentham (1864). He noted that while the *Juliflorae* appeared a fairly distinct group the present subseries within the group were not clearly revealed in the analyses. In particular the *Rigidulae* were partitioned among the remaining three subseries. *A. conferta* in all phenograms and the ordinations showed greater affinity with the *Uninerves* than with *A. spondylophylla* and appeared to belong to the *Uninerves*. Both species of the *Pungentes-Armatae* (*A. maitlandii, A. brachycarpa*) also showed close affinity with many of the *Uninerves* and on the evidence obtained the series *Pungentes* did not seem worthy of this rank. The *Uninerves* did not appear to be as natural a group as the *Juliflorae*. Within this group the species of the *Angustifoliae* did not appear close phenetically. The *Racemosae* was in general a satisfactory entity. The *Plurinerves* like the *Uninerves* did not appear a very natural group. A striking feature was the distinctiveness of the *Dimidiatae*. The *Microneurae* also appeared a relatively distinct group but the *Nervosae* and the *Oligoneurae* overlapped and mixed with each other and with other subseries and series and were never clearly demarcated.

Johnson proposed a hypothetical scheme:

(a) Series *Juliflorae*.

(b) Series *Brunioideae*. This had only one representative in the analyses *A. spondylophylla. A conferta* was excluded.

(c) Series non-*Racemosae*. Included were members of both the *Uninerves* and *Plurinerves* with heads single or in pairs in the axils, as well as *A. conferta* and the two members of the *Pungentes*.

(d) Series *Racemosae*. This included both uninerved and plurinerved species with heads in racemes or groups (*A. fasciculifera*).

(e) *Dimidiatae.* The species considered were *A. rothii, A. platycarpa, A. flavescens* and *A. retivenia.*

Johnson's work deserves serious consideration. Though probably only a seventh of the phyllodine species were considered it suggests that groups recognised by Bentham may well be arranged in a different hierarchical order. In the classification of the *Phyllodineae* I have followed Johnson to the extent that the *Pungentes* and the *Brunioideae* (type species: *A. brunioides*) have not been given the same ranks as the *Plurinerves* and *Uninerves.*

Pettigrew and Watson (1975) who were "concerned with the main framework of the Australian acacias" have also made a major contribution to classification. Their work is marred by probable errors in identification and the use of incorrect names * but these do not significantly affect their overall conclusion that Vassal's section *Uninervea* ** is a very coherent group. This conclusion is hardly borne out by their figure 2. The *Uninervea* consists of groups 319, 332 and 334. Group 319 (14 species) is homogeneous when species are arranged according to Bentham's systems of classification. Eight of the 28 species of group 332 cannot be considered uninerved, however, and six of the 30 species of group 334 are also misplaced. In all, 14 of the 58 "uninerved phyllodineous" species are either not uninerved or not phyllodineous.

It is probably futile to examine the composition of the groups in detail but there are a few noteworthy anomalies. The presence of *A. bancroftii,* which is uninerved, in group 336 is unexpected, as is the appearance of *A. calcicola* and *A. georginae* in group 335 and their apparent near-relatives *A. cana* and *A. cambagei* in group 336. If other species of subgenus *Acacia* had been included, would they have been placed in group 332 with *A. farnesiana?*

The most acceptable classification of *Acacia* down to the rank of section is:

I. *Subgenus* **Acacia.** Lectotype: *Mimosa scorpioides* L. (=*A. nilotica* (L.) Del.). Vide Britton & Brown, Illust. Flora North U.S. & Canada ed. 2. 2:331 (1913).

1. *Section* **Acacia**

Section *Conjugato-Pinnatae* DC., Prodr. 2:455 (1825). Lectotype: *A. gummifera* Willd.

Section *Globuliferae* DC., *op. cit.* 460 (1825). Lectotype: *A. arabica* Willd. (= *A. nilotica*).

Section ("Division") *Bipinnatae* Benth., Fl. Aust. 2:302 (1864). Lectotype: *A. bidwillii* Benth.

II. *Subgenus* **Aculeiferum** Vassal, Bull. Soc. Nat. Hist. Toulouse 108:138 (1972). Type: *A. senegal* (L.) Willd.

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* Group 319 (fig. 2) includes *A. botrycephala, A. elata* and *A. terminalis. A. botrycephala* is conspecific with *A. terminalis* but the name *A. terminalis* has often been misapplied to *A. elata.* Probably only two species are covered by the three names. Both *A. monticola* and *A. impressa* are in group 336, though *A. monticola* J. M. Black is based on *A. impressa* F. Muell. *A. impressa* Lindl. may have been intended, but this is conspecific with *A. penninervis* (group 334). *A. sibirica* (group 335) is the same as *A. kempeana* (group 332). *A. ptychophylla* seems to be extremely rare and its data probably apply to *A. drepanocarpa* subsp. *latifolia* which has often been misidentified as *A. ptychophylla.*

** Section *Uninervea* Vassal and *Uninerves* (Benth.) Taub. are both placed under section *Phyllodineae* DC. The section *Botrycephalae* (Benth.) Taub. is treated as distinct. See p. 82.

2. *Section* **Spiciflorae** DC., Prod. 2:456 (1825). Lectotype: *A. ataxacantha* DC.

   Section *Vulgares* (Benth.) Taub., Pflanzenf. ed. 1. 3(3):113 (1894). Based on series *Vulgares* Benth., London J. Bot. 1:322 (1842). Lectotype: *A. ataxacantha* DC.

   Section *Aculeiferum* Vassal, Bull. Soc. Nat. Hist. Toulouse 108:139 (1972). Type: *A. senegal.*

   Section *Monocanthea* Vassal, Bull. Soc. Nat. Hist. Toulouse 108:139 (1972). Type: *A. ataxacantha.*

3. *Section* **Filicinae** (Benth.) Taub., Pflanzenf. ed. 1. 3(3):113 (1894). Based on series *Filicinae* Benth., London J. Bot. 1:322 (1842). Type: *A. filicina* Willd.

III. *Subgenus* **Heterophyllum** Vassal, *op. cit.* 139 (1972). Type: *A. stenophylla* A. Cunn. ex Benth.

4. *Section* **Botrycephalae** (Benth.) Taub., Pflanzenf. ed. 1. 3(3):111 (1894); Maiden & Betche, Census Pl. N.S.W. 96 (1916). Based on series *Botrycephalae* Benth., London J. Bot. 1:321 (1842). Type: *A. botrycephala* Desf. (=*A. terminalis* (Salisb.) Macbride.)

5. *Section* **Phyllodineae** DC., Prodr. 2:448 (1825); Benth., Fl. Aust. 2:302 (1864); Taub., Pflanzenf. ed. 1. 3(3):109 (1894). Lectotype: *A. penninervis* Sieb. ex DC.

   Section *Uninerves* (Benth.) Maiden & Betche, Census Pl. N.S.W. 90 (1916). Based on series *Uninerves* Benth., Fl. Aust. 2:307(1864). Lectotype: *A. penninervis* Sieb. ex DC.

   Section *Brunioideae* (Benth.) Maiden & Betche, Census Pl. N.S.W. 90 (1916). Based on subseries *Brunioideae* Benth., London J. Bot. 1:343 (1842). Type: *A. brunioides* A. Cunn. ex Benth.

   Section *Uninervea* Vassal, Bull. Soc. Nat. Hist. Toulouse 108:140 (1972). Type: *A. retinodes* Schlecht.

6. *Section* **Lycopodiifoliae*** Pedley.

   Phyllodes small, without definite nerves, terete or slightly flattened, in regular or slightly oblique whorls with prominent stipules between them, stipules sometimes absent. Flowers in heads on axillary peduncles. Type species: *A. lycopodiifolia* A. Cunn. ex Hook.

7. *Section* **Alatae** (Benth.) Pedley, **stat. nov.** Based on subseries *Alatae* Benth., London J. Bot. 1:323 (1842). Type: *A. alata* R.Br.

8. *Section* **Plurinerves** (Benth). Maiden & Betche, Census Pl. N.S.W. 93 (1916). Based on series *Plurinerves* Benth., Fl. Aust. 2:312 (1864). Lectotype: *A. melanoxylon* R.Br.

   Section *Calamiformes* (Benth.) Maiden & Betche, Census Pl. N.S.W. 90 (1916). Based on subseries *Calamiformes* Benth., London J. Bot. 1:320 (1842). Lectotype: *A. calamifolia* Sweet.

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* Section **Lycopodiifoliae** Pedley sect. nov.

Phyllodia parva teretia vel leviter planata, sine nervis manifestis, in verticillos regulares vel leviter obliquos stipulis prominentibus inter eas disposita; stipulae interdum nullae. Flores in capitula in pedunculis axillaribus dispositi. Typus: **A. lycopodiifolia** A. Cunn. ex Hook.

Section *Pungentes* (Benth.) Maiden & Betche, Census Pl. N.S.W. 89 (1916). Based on subseries *Pungentes* Benth., London J. Bot. 1:334 (1842). Lectotype: *A. latipes* Benth.

Section *Heterophyllum* Vassal, Bull. Soc. Nat. Hist. Toulouse 108:140 (1972). Type: *A. stenophylla* A. Cunn. ex Benth.

9. *Section* **Juliflorae** (Benth.) Maiden & Betche, Census Pl. N.S.W. 95 (1916). Based on subser. *Juliflorae* Benth., London J. Bot. 1:161 (1842) (Note: also spelled "Juliferae"). Lectotype: *A. julifera* Benth.

10. *Section* **Pulchellae** (Benth.) Taub., Pflanzenf. ed. 1. 3(3):111 (1894). Based on series *Pulchellae* Benth., London J. Bot. 1.321 (1842). Type: *A. pulchella* R.Br.

Section *Pulchelloidea* Vassal, Bull. Soc. Hist. Nat. Toulouse 108:140 (1972). Type: *A. pulchella* R.Br.

There are so few species of subgenus *Acacia* in Australia that its unsatisfactory subsectional classification, discussed by Ross (1973), is of little importance to Australian workers but the subgenus *Heterophyllum* is predominantly Australian and its satisfactory classification would be of value. Considerable basic taxonomic work is still required, especially on plants of northern and western Australia, before such a classification can be drawn up. There is no great need to subdivide the small sections *Botrycephalae* and *Pulchellae* but in Queensland further division of larger sections is warranted. The application of the names of infrasectional taxa is still reasonably clear, largely because the classifications of Bentham (1864, 1875) have been followed with little modification by most workers.

The ranks of the sections *Botrycephalae* and *Pulchellae* are open to some doubt. Both are distinguished from other sections of subg. *Heterophyllum* by their bipinnate leaves and from each other by their inflorescences and foliage and appear to warrant, at least *pro temporare,* sectional rank. The *Botrycephalae* have close affinities with, and may have been derived from, the Racemosae group of the *Phyllodineae.* The *Pulchellae* form a diverse assemblage of 24 species (none of which is found in Queensland), some which are related to species of the *Botrycephalae* and one (*A. insolita*) whose uppermost leaves are reduced to phyllodes is related to the *Phyllodineae.*

In Appendix 1 lectotypes are chosen for some taxa below the rank of section so that there can be no doubt in future of the application of the names of these taxa.

The classification is basically the same as that used by Black (1924) with the addition of section *Alatae* for species, all from Western Australia, with phyllodes decurrent on the stems forming two opposite wings and section *Lycopodiifoliae* for the unusual species (excluding *A. cedroides*) dealt with previously (Pedley 1972). These had been included in subseries *Brunioideae* but *A. brunioides,* the type species, is referred here to section *Phyllodineae* so a new name is proposed. The species of subseries *Triangulares* described by Bentham (1842) were subsequently referred by him to either series *Plurinerves* or to series *Uninerves* (= section *Phyllodineae*), but they form a coherent group possibly worthy of subsectional rank. *A. amblygona* included by Bentham in *Triangulares* is the type of subsect. *Parviscutellae* Vassal and if *Triangulares* is regarded as a subsection the name *Parviscutellae* must be used for it despite the fact that the only other species included by Vassal (*A. continua* and *A. spinescens*) are excluded.

Most species referred by Bentham to the series *Calamiformes* and *Continuae* are placed in either section *Plurinerves* or *Phyllodineae*. This is the most significant departure of the present (and Black's) classification from Bentham's.

The system of classification is bound to be further modified. Further studies might indicate other changes to what is still basically Bentham's system. The phyllodes of some Western Australian species (Vassal and Guinet 1972; Pedley 1975; Maslin 1978) have an unusual structure (diaphyllodinous) and the species might form another section. The treatment of subseries *Dimidiatae* Benth. (1842) is a problem. Tropical species such as *A. dunnii* and *A. holosericea* are closely related despite the differences in their inflorescences, while *A. binervata* and *A. wardellii* are probably more closely related to some species of the *Phyllodineae* than to species of the *Plurinerves*. If some species of subseries *Dimidiatae* were transferred to series of *Phyllodineae* and *Plurinerves* the residue of closely related species could possibly form another taxon, possibly also of serial rank.

There are groups of closely related species in subgenus *Heterophyllum* and a fruitful approach to classification might be an agglomerative system such as Pryor and Johnson (1971) adopted for *Eucalyptus*. Examples of species that could constitute subseries: (a) *A. brachycarpa, A. echinula, A. saxicola* and *A. ulicifolia;* (b) *A. implexa, A. melanoxylon* and the extra-Australian species, *A. heterophylla, A. kauaiensis, A. koa* and *A. xiphoclada;* (c) *A. complanata, A. excelsa, A. fleckeri, A. homaloclada, A. simsii* and their relatives *A. confusa, A. mathuataensis, A. richii* and *A. simplex* which occur in the Pacific.

The arranging of groups of related subseries into series would probably result in the recognition of many series but it is likely that these would have more significance than Bentham's equivalent taxa; that is, the subseries of his 1864 classification. Some of Bentham's subseries, for example, the *Racemosae* of the series *Uninerves* (= section *Phyllodineae*) and the *Microneurae* of the series *Plurinerves* (= section *Plurinerves*) are well defined; whereas others such as the *Brevifoliae* and *Falcatae* of the series *Juliflorae* (= section *Juliflorae*) are difficult to distinguish from each other. It is useful to refer to some of these subseries in a general way and in the following discussion they are termed "groups". Some isolated species such as *A. monticola, A. peuce* and *A. wickhamii* will probably form monospecific subseries or even series.

Some characters useful in identification and classification

Bentham (1875) noted the importance of vegetative characters in distinguishing his series of *Acacia* and it is noticeable that in a genus of such size there is little variation in the flowers but considerable variation in fruits and vegetative parts. Many characters are useful in identification and classification, some of only limited use with herbarium material but valuable in the field. Vassal (1972) discussed at some length the evolutionary significance of many characters, including some considered below.

HABIT. All species are evergreen woody perennials. Most are shrubs or small trees but there is a considerable range in size. *A baueri* is a subshrub often less than 30 cm tall while *A. bakeri* is a rainforest tree up to 30 m tall. Widely ranging species vary considerably in size. In near-coastal districts *A. harpophylla* is 25 m or more tall but at the limit of its range in south-western Queensland it is usually less than 5 m. *A. aulacocarpa* is extremely common in coastal districts of southern Queensland but it is usually a smaller tree than it is in north

Queensland and New Guinea. In specially favourable situations individual plants may become extremely large. Trees of *A. neriifolia, A. salicina* and *A. sparsiflora* more than 20 m tall have been seen but such exceptional plants are not accounted for in the description of species. Modifications of the habit of plants subjected to unusual conditions have also been noted. Plants for *A. humifusa* near the sea at Cape Bedford, north of Cooktown, subjected to constant strong winds from the sea are prostrate, as are associated plants of *Grevillea pteridiifolia.* Both are usually erect plants.

BARK. The bark of most tree species is hard and somewhat furrowed and offers little help in identification. Some do have distinctive bark, however. *A. harpophylla* has black, coarsely and deeply furrowed bark similar to species of *Eucalyptus* known as ironbarks. The bark of the closely related *A. cambagei* is dark grey and somewhat flaky. The outer bark of *A. rhodoxylon* which is thin and comes off in small, more or less square flakes was likened by Maiden in the protologue of the species to a French fowl. Four species, *A. chisholmii, A. curranii, A. cyperophylla* and *A. lysiphloia,* section *Juliflorae,* and *A. monticola* in section *Plurinerves,* have what is referred to as "mineritchie" bark. Mineritchie is a vernacular name for *A. cyperophylla.* The inner bark is reddish and the outer bark peals off in thin narrow strips curling at the ends.

BRANCHLETS. Branchlets vary from terete or subterete to trigonous or even ancipitous. Most species have unremarkable terete or somewhat angular ones but branchlets of others are distinctive and useful in identification, particularly as the range of variation within species is not great. *A. complanata* and *A. homaloclada* have flattened almost winged stems and *A. calyculata* is unique in the *Juliflorae* in also having flattened branchlets. The colour of branchlets, though subject to modification by factors such as degree of exposure to light, is sometimes useful. *A. leiocalyx* has remarkably sharply 3-angled branchlets which are usually red.

INDUMENTUM. The presence or absence of indumentum is sometimes constant within a species, but at other times its occurrence is irregular. The distribution of hairs on floral parts, especially on the calyx and ovary is more regular than it is on vegetative organs and is useful in distinguishing some species. The distribution of hairs on the phyllodes of such species as *A. flavescens, A. longispicata, A. neriifolia, A. polifolia* and *A. pubicosta* is a useful diagnostic character. *A. flavescens* and *A. leptoloba* are remarkable in having yellowish stellate hairs on young shoots and at the base of the phyllodes. The indumentum of the phyllodes determines to a great extent the overall silvery grey appearance of *A. aneura, A. cambagei, A. harpophylla, A. pubifolia* and others.

There is considerable variation between and within species in the texture of the phyllodes and branchlets. Some species, especially in north-western Queensland, are extremely resinous to the touch. Of note are *A. asperulacea, A. verniciflua, A. monticola, A. phlebocarpa, A. viscidula, A. ixiophylla, A. lysiphloia, A. chisholmii* and *A. hilliana. A. melleodora* is resinous but not particularly sticky and has a distinctive fragrance that persists even on dried material. *A. laccata* has a varnished appearance.

STIPULES. The presence of stipular spines is characteristic of subgenus *Acacia* (see Guinet 1969; Ross 1973) and all the Queensland representatives of the subgenus have them at least when young. There is no special relationship between ants and plants as there is in some American and African species of the subgenus.

The stipules of subg. *Heterophyllum* are, with some exceptions, small, inconspicuous and often evanescent. *A. paradoxa* and *A. victoriae* are exceptional among the Queensland species, in having stipular spines, those of *A. victoriae* being sometimes reduced to blunt knobs. Stipular spines, which are also found in some Western Australian species, do not indicate either close affinity with species of subgenus *Acacia* or, for the Queensland species at least, with each other. The stipules of *A. macradenia* are rather membranous when young but become hard, reflexed and almost spiny.

LEAVES. Mature plants of species of subg. *Heterophyllum* except sections *Botrycephalae* and *Pulchellae* have phyllodes while those of subg. *Acacia,* subg. *Aculeiferum* and sections *Botrycephalae* and *Pulchellae* have leaves only.* Seedlings of all species of the genus have true leaves, whether or not they eventually develop phyllodes. Except in subg. *Aculeiferum* the first leaf developed is always pinnate. Vassal (1972) in a detailed discussion of evolutionary trends within Acacia has suggested that there is an evolutionary trend: Pinnate→bipinnate→phyllodes. Some evidence indicates however that section *Botrycephalae* with bipinnate foliage evolved from section *Phyllodineae* with phyllodes.

The succession of juvenile leaves was investigated by Cambage (see references 1915 to 1928) and by Vassal (1972) who distinguished four "modes des succession foliaire" based on the primordial pinnate foliage.

Vassal's categories might be further subdivided to account for species where the pinnate foliage is followed immediately, not by bipinnate leaves but by phyllodes—*A. confusa* with one pinnate leaf (Cambage 1929; Li 1974), and *A. harpophylla* (Cambage, l.c.) and *A. georginae* with two.

Cambage and Vassal found that most species of subg. *Acacia* and *Aculeiferum* have seedlings of Vassal's Mode 2 with a few Mode 1B, and characters of seedlings may be useful in elucidating the origin and relationships of major groups of species.

Stebbins (1950) suggested that the retention of pinnate or bipinnate seedling leaves has a selective advantage and that species in which the seedling leaves persist the longest are native to regions which are moister than those inhabited by most of the species in which the adult reduced type of leaf appears at a relatively early age. Li who examined 433 seedlings of *A. confusa* suggested that it may have originated in a very dry region and that it might be the most advanced species of the genus. Both suggestions should be treated cautiously though Stebbin's hypothesis could prove to be substantially true.

In *A. aneura* temperature affected the development of phyllodes following the seedling leaves (Carr and Burdon 1975) and it could possibly affect the succession of pinnate and bipinnate leaves. Under field conditions some species such as *A. aneura, A. georginae* and *A. harpophylla* have few pinnate leaves, whereas others, especially *A. attenuata* and *A. rubida,* both of which may produce flowers before phyllodes develop, *A. neriifolia* and *A. pustula* have many. Flowering plants of *A. attenuata* with only juvenile leaves resemble those of *A. pruinosa.*

Of considerable interest is *A. latisepala.* In the protologue *A. latisepala* was compared with *A. spectabilis* var. (?)*stuartii* and *A. botrycephala* (=*A. terminalis*). I have since seen plants which have well developed phyllodes as well as bipinnate leaves. Evidently only a small proportion of

* One species of the *Botrycephalae* and one of the *Pulchellae* sometimes bear phyllodes.

plants develop phyllodes and I think that *A. latisepala* is correctly placed in section *Botrycephalae* though it has affinities with *A. rubida* and other species of the Racemosae group of section *Phyllodineae.* The persistence of juvenile leaves, the racemose inflorescences, the linear pods and longitudinal seeds with clavate arils of the many species of the Racemosae group are also characters of many species of the section *Botrycephalae.* The centre of development of both groups is south-eastern Australia and it is likely that the *Botrycephalae* evolved from the *Phyllodineae. A. ×hanburyana,* evidently a hybrid species of the *Phyllodineae* and *Botrycephalae* also suggests that the two are closely related.

GLANDS. (Figure 7) The position and structure of glands are of significance in the classification and identification of Acacias. They occur on the primary axis and rarely on the secondary axis of adult leaves and sometimes of juvenile ones, and on the dorsal margin or, in some species from Western Australia, the dorsal surface of phyllodes. Hardy (1912) pointed out the taxonomic importance of their number and position on phyllodes and Maiden (1916) drew attention to the need to describe the glands, and he did so in many species he described subsequently.

The structure of glands and their position along the primary axis varies little within Queensland species of section *Botrycephalae* but there is considerable variation between species. The number and size of pinnae and leaflets together with the size and distribution of glands are enough to distinguish individual species.

In other sections of *Heterophyllum,* too, the glands are of value in identifying and classifying species. Glands of most species are inconspicuous, consisting of a more or less circular orifice surrounded by a rim usually only slightly different in colour and texture from the margin of the phyllode. Sometimes as in *A. falcata* and *A. macradenia* they may be somewhat elongated. *A. pubicosta* and *A. polifolia* have notably small glands with a small, often slightly distal, orifice. The glands of *A. pustula* and *A. neriifolia* are prominent, with a relatively large orifice and a well defined rim which projects from the margin of the phyllode (Fig. 7c). Glands of this type are termed "pustular" in the key to species (p. 102). The glands of *A. perangusta* project from the margin of the phyllodes but they are small and lack a prominent rim while those of *A. bancroftii* (Fig. 7f) and *A. wardellii* are small and circular and are often placed on projections of the phyllode. Neither type has been called pustular.

In most species the gland is at, or within a few millimetres of, the base of the lamina of the phyllode. As noted previously by Hardy in some species of *Uninerves* (=*Phyllodineae*) the single gland is some distance from the base (Fig. 7c, d, g, h). Other species have several glands along the dorsal margin. Some members of Bentham's subseries *Dimidiatae* of *Plurinerves,* e.g. *A. binervata* and *A. flavescens* (Fig. 7j) have a small gland close to where the uppermost major longitudinal nerves approaches the margin. When a gland is some distance from the base it is sometimes connected to the midnerve by a connecting nerve. This is considered a diagnostic character for *A. penninervis* (Fig. 7g) but it also occurs in other species of section *Phyllodineae,* even in *A. decora* and *A. pustula* when they have broad phyllodes. The nervature associated with the gland in *A. penninervis* is sometimes complex (Fig. 7g). Some species of the section *Phyllodineae* have a small gland at the tip of the phyllode as well as one or more conspicuous ones closer to the base. It is found *A. bivenosa* and related Western Australian species such as *A. rostellifera,* and in *A. gnidium, A. hockingsii* and *A. calantha.*

SHAPE AND VENATION OF PHYLLODES. (Figure 8). Pettigrew and Watson (1975) though dubious of the usefulness of glands as key characters, demonstrated the value of vegetative characters as a whole in identifying Acacias. The arrangement of the phyllodes, their shape, size and venation, as well as their indumentum and glands, already discussed, enable a large proportion of Queensland species to be identified without reference at all to flowers and fruits. In the key to species vegetative characters have been used not only to distinguish major groups but also to distinguish related species. The use of vegetative characters might be extended by using some utilized by Pettigrew and Watson.

Species of section *Lycopodiifoliae* have regularly whorled phyllodes. Species of this section have a general appearance different from all other species of the genus, and one might expect the taxon to have higher rank. The species do not differ from others in the characters of the flowers and pods, however, and other species not included in the section also have verticillate phyllodes. *A. verticillata* is excluded because of its spicate inflorescence; *A. cedroides* is rather arbitrarily excluded on account of its prominently ribbed phyllodes; while *A. baueri* is included despite its phyllodes being sometimes scattered, not verticillate, and its stipules being sometimes absent. Other species, especially *A. conferta, A. brunioides* and *A. ruppii* otten have phyllodes in groups and are somewhat intermediate between the *Phyllodineae* and *Lycopodiifoliae.*

A. triptera is the only Queensland species with phyllodes decurrent on the stem.

There is a considerable range in the length of the pulvinus. The phyllode corresponds to the petiole and rachis of a pinnate leaf (Boke 1940) and it is more accurate to refer to the basal part as the pulvinus rather than the petiole. The term has been used by Maslin (1974). In *A. latifolia* and *A. cretata* it is hardly developed at all but it is, on the whole, of little value in distinguishing species.

In contrast to species from Western Australia relatively few Queensland ones have quadrangular or terete phyllodes. Those of *A. cyperophylla* and *A. rigens* are always terete but in *A. ramulosa,* which has been poorly collected in Queensland, and *A. coriacea* they vary from terete to flat, sometimes on a single plant. It seems that the major and perhaps only difference between *A. arida* and *A. orthocarpa* is that the phyllodes of the former are flat and those of the latter terete.

There is considerable variation in the shape of phyllodes, not only within species but also on single plants. Some species have juvenile phyllodes different in shape and sometimes indumentum, from the mature phyllodes. Juvenile phyllodes of *A. juliflora* and *A. sparsiflora* are straight, almost elliptic and densely tomentose in contrast to the falcate, elongate glabrous adult phyllodes. On the other hand juvenile phyllodes of *A. maidenii* are much longer and narrower than adult phyllodes. A few species of the *Juliflorae* never develop the mature foliage of the type that related species develop but retain what are apparently juvenile phyllodes throughout their life. This phenomenon is well known in eucalyptus such as *Eucalyptus melanophloia* and *E. pruinosa.* The retention of juvenile phyllodes is difficult to demonstrate in *Acacia* where most species do not have distinctive juvenile or intermediate foliage characteristic of *Eucalyptus* but the adult phyllodes of *A. striatifolia* are so like the juvenile ones of *A. blakei* that they might be regarded as persistent juveniles, and the

same might also be true of the phyllodes of *A. brevifolia* and *A. pubifolia*. The indumentum of the latter might be considered analagous to the retention of indumentum similar to that found on the juvenile phyllodes of *A. julifera* and *A. sparsiflora*.

In the description of species the length, breadth, and leaf index (length/breadth ratio) of phyllodes is given. There is a wide range of variation in length and, to a lesser extent, breadth. The relationship between length and width of phyllodes has been investigated for many species with large phyllodes and the following equation has been found to hold for all species studied:

$$log_{10} i = ab + c$$

where b is the width and i the leaf index of the phyllodes and a and c are constants for each species.

This property of the phyllodes has been used in an attempt to elucidate relationships among some members of the Microneurae group of the *Plurinerves*. When three mature undamaged phyllodes of a number of herbarium specimens were measured highly significant linear equations for species were derived.

As might be expected in a group of closely related species the regression lines are with one exception close and more or less parallel. *A. microsperma* has an exceptionally high value of c. The regressions therefore have only limited application in distinguishing species but they may be useful in confirming that species are identical.

Since Bentham's first classification of *Acacia* (1842) it has been recognised that the venation of phyllodes is an important character in classification and identification. It is significant that Australian workers, the latest being Burbidge and Gray (1970) who constructed a key making use of vegetative, floral and fruiting characters, Court (1972) and Pettigrew and Watson (1975) who emphasised or used vegetative characters exclusively, have all used the venation of phyllodes as a major distinguishing character. In the key to the Queensland species (p. 102) characters of the phyllode have been used as much as possible but because of the large number of species other morphological characters have been used where necessary.

Species of sections *Plurinerves* and, when *A. dorothea* is excluded, *Juliflorae* have plurinerved phyllodes and those of *Phyllodineae* uninerved ones. It is convenient to follow Black (1924) and treat tetragonous phyllodes as being uninerved. In plurinerved phyllodes the major longitudinal nerves extend from the pulvinus to the apex, except in species of the Dimidiatae groups of both *Plurinerves* and *Juliflorae* where all but one of the major nerves terminate at or near the dorsal margin below the apex.

Boke (1940) found that after the development of the first three vascular bundles of the phyllodes of *A. longifolia* the formation of subsequent ones was dependent on the growth of the lamina. That is, the number of longitudinal nerves was related to the width of the phyllode. Measuring a large number of phyllodes of *A. maidenii* revealed that the relationship between the breadth of the phyllodes and the number of longitudinal nerves is statistically significant. It is believed that such a relationship holds for most plurinerved species.

The venation of uninerved phyllodes is also affected by an increase in width. Such species, such as *A. decora,* have markedly penninerved, broad phyllodes in contrast to narrow phyllodes without any marked lateral nerves. In extra-Queensland plants of *A. verniciflua* increasing breadth in phyllodes is correlated with the development of a second longitudinal nerve. The relationship between

width of phyllode and development of an accessory longitudinal nerve has been investigated in *A. bivenosa* (Pedley, 1977). In this species phyllodes more than 10 mm wide has two longitudinal nerves; those less than 7 mm wide have one; and phyllodes 7–10 mm have one or two. *A. deuteroneura* and *A. difformis* are apparently uninerved species with a second longitudinal nerve more or less well developed. The second longitudinal nerve rarely extends the full length of the phyllode, but in *A. binervata* and *A. wardellii* two longitudinal nerves extend the full length of the phyllode. They are apparently *Plurinerves* though their affinities are with *A. penninervis* and *A. bancroftii,* both *Phyllodineae.*

If, in plurinerved species, the width of phyllodes is correlated with the number of longitudinal nerves, then the distance between longitudinal nerves would be more or less constant. The distance between nerves of some species is markedly greater in some species than it is in other. This was recognized by Bentham who distinguished some subseries of the series *Plurinerves* partly on the disposition of the nerves. The Nervosae group is rather heterogeneous but *A. complanata, A. excelsa* and the related species mentioned on p. 84 have widely spaced nerves, a character which sets them apart from other groups of the *Plurinerves.* The distance between longitudinal nerves is also a character which separates closely related species of the *Juliflorae.* In the key to species the number of longitudinal nerve is expressed as a number per mm, the phyllode being measured across its widest part. The differences are not great and there is an overlap of values in related species but it is of value in distinguishing *A. leptocarpa, A. oligophleba* and *A. tropica* which have widely spaced nerves from other species with crowded nerves.

Species of the Microneurae group of the *Plurinerves* (*A. calcicola, A. cambagei* and *A. cana*) and some of the *Juliflorae* (*A. blakei, A. curvinerva, A. julifera, A. striatifolia,* etc.) have crowded longitudinal nerves without anastomosing nerves between them (Fig. 8e), but many plurinerved species have anastomoses between the longitudinal ones. Though the anastomoses of some species are so distinctive that they are easily recognized (Fig 8c, h), on the whole the differences between the patterns of venation of related species are slight and difficult to define. Only the Dimidiatae group of the *Juliflorae* are distinguished in the key from other species by their anastomoses. In the Dimidiatae group the ultimate vein islands are more or less equilateral. Whereas in other species they are elongate, usually more than three times as long as broad (Fig. 8d).

INFLORESCENCE. (Figure 9). The flowers of most species of *Acacia* are arranged either in heads or in spikes and the nature of the inflorescence is a convenient character to use in subdividing the genus. Ross (1973) discussed its usefulness for African species. It is sometimes difficult to determine whether the inflorescences of some species are in spikes or in heads. Though *A. clivicola, A. curranii, A. lysiphloia* and *A. granitica* are all placed in the *Juliflorae* their inflorescences are often reduced to only slightly elongate heads. One subspecies of *A. nuperrima* has flowers in spikes (Fig. 9g), the other flowers in heads. The change from spikes to heads and the reverse have probably occurred many times during the evolution of *Acacia* and speculation as to what type is more primitive appears to be fruitless.

Tindale and Roux (1969), in discussing the occurrence of flavanols in the heartwoods of *Acacia* spp. suggested that the *Plurinerves* and *Juliflorae* might be more closely related than is generally believed. It may be significant therefore that species with plurinerved phyllodes have either capitate or spicate inflorescences, whereas those with uninerved phyllodes always have capitate ones.

The arrangement of heads and, to a lesser extent, spikes is another useful character in defining groups of related species. Bentham used the fact that heads are arranged in racemes or single or in pairs in the axils in his circumscription of subseries within his major series *Uninerves* (= section *Phyllodineae*) and *Plurinerves*. Other morphological characters are correlated with those of the inflorescence (Johnson 1973) and differences in inflorescences are therefore important in the classification of the *Phyllodineae*.

As well as the division of species into one group with heads on axillary peduncles and another with heads in racemes, there is considerable variation in the structure of racemes, which permits some subdivision of the second group. Inflorescences of various types (Fig. 9) are shown somewhat intermediate between the axillary and racemose. The heads are on peduncles in the axils of reduced phyllodes but these are borne on indeterminate, but usually short, branches. The racemes of most species are determinate with all the heads opening together. Those of *A. penninervis, A. platycarpa, A. hemignosta* and other species are indeterminate and centrifugal. Consequently these species flower for a long period. Occasionally the axis of the raceme of some species such as *A. bivenosa* and *A. blakei* grows out into a leafy shoot and then the heads are lateral.

There is considerable variation between species in the size of racemes. Those of *A. penninervis* are up to 12 cm long with 15 to 30 branches. Sometimes the branches are again branched so that the raceme is compound. On the other hand the axis of the racemes of the Microneurae group of section *Plurinerves* are often less than 1 cm long (Fig. 9c). The inflorescence of *A. complanata, A. simsii* and related species (see p. 84) consists of four heads in two pairs (Fig. 9f). One head of each pair opens before the other and at the same time as the first opening head of the other pair. In the key to species I have regarded such an inflorescence as a condensed raceme though it is impossible to determine from the gross morphology whether the inflorescence has been derived from a raceme.

The arrangement of spikes is not of great importance in classifying and identifying species, but the length of the spike and arrangement of flowers (sparse or otherwise) are somewhat more important. The longest spikes are those of *A. concurrens, A. leiocalyx* and *A. longispicata* which are up to 10 cm long. Flowers are often sparsely arranged along the rachis of long spikes.

Many Queensland species of *Acacia* are andromonoecious. Their inflorescences consist of both staminate and bisexual flowers—a phenomenon noted for *A. baileyana* by Newman (1932b) and for *A. nilotica* by Sinha (1971). Individual spikes or heads may even consist wholly of male flowers but usually at least a few bisexual flowers occur. Environmental factors during the development of the flowers may determine the proportion of male flowers. It is noteworthy that a rudimentary ovary is often found in functionally male flowers and is usually glabrous, even in species where normally developed ovaries are pubescent.

COLOUR OF FLOWERS. Except for those of *A. purpureapetala* which are pink, the flowers of Queensland species of *Acacia* range in colour from almost white (*A. calyculata* and *A. longissima*) to orange-yellow (*A. venulosa*). The colour is more or less constant for each species. Ross (1971) dealing with species of *Acacia* in Natal, considered flower colour to be a taxonomically important character but in Queensland it appears to be useful only in distinguishing closely related taxa, especially in the field. The flowers of *A. venulosa* and *A. saxicola* are a deeper yellow than those of the closely related *A. baeuerlinii* and *A. ulicifolia* respectively; and those of *A. brunioides* subsp. *granitica* are deeper than those of *A. brunioides* subsp. *brunioides*. Colours of the flowers of some species

in south-eastern Queensland are given in Appendix 2. The colour of the flower is due mostly to the colour of the staminal filaments which project from the flower.

BRACTS. Following Maslin (1972) I have referred to the bracts that subtend individual flowers in either heads or spikes as bracteoles. Broadly there are two types—one with narrow, more or less terete stipe and a peltate lamina at about right angles; the other with a flat narrow claw and a somewhat broader lamina in about the same plane as the stipe. Attributes of the bracteoles are of only limited value in distinguishing species and are usually omitted from the description of species.

Bracts also occur at the base of the peduncles of axillary heads or of branches of racemes, or along peduncles. They are usually small and inconspicuous but are occasionally useful in identification. *A. suaveolens* is unique among the Queensland species in having heads completely enclosed before development in ovate concave bracts. This is also a conspicuous character of *A. subcaerulea* and some other species from Western Australia. Most species of subg. *Acacia* have an involucre of bracts on the peduncles and the position of the involucre was the basis of Bentham's distinguishing three subseries of the series *Gummiferae*. The character is not of great value however.

FLOWERS. The flowers of Queensland species show little variation in size or structure and are of only limited value in classification or identification. All are sessile. The flowers of most species have a calyx about 1 mm long, the corolla about twice as long and stamens 3–4 mm long. Species with calyxes 0·6 mm or less long are *A. cincinnata, A. lineata, A. betchei, A. fimbriata, A. argyrodendron, A. cana* and *A. aprepta.* A few species have flowers markedly larger than the norm. The corollas of *A. megalantha* and *A. myrtifolia* are 3–4 mm long. The flowers of *A. baeuerlenii* are exceptionally large mainly on account of the stamens (up to 7 mm long) rather than the corolla which is only about 2 mm long.

There is little variation in the number or structure of floral parts. Most species have 5-merous flowers but those of *A. maidenii, A. obtusifolia* and their allies (all placed by Bentham in subser. *Tetramerae*), and the unrelated *A. whitei* are 4-merous.

The lobing of the calyx and corolla, and the indumentum of the various parts of the flower are sometimes useful in distinguishing species but do not appear to be of much value in defining groups of related species. Some species of the *Lycopodiifoliae* have corollas with distinct, sometimes anastomosing, longitudinal nerves prominent in the bud. A few species of unrelated subsections have similar corollas—*A. monticola* and *A. phlebocarpa* (*Plurinerves*) and *A. helicophylla* (*Juliflorae*), a species from the Northern Territory.

Stamens vary little, except in number, from species to species. None of the Australian species examined has glandular anthers a character of some species of subgenus *Aculeiferum* (e.g. *A. willardiana* Britton & Rose).

Guinet (1969) discussed the pollen of Acacia at considerable length and also reviewed previous work of Coetzee (1955) and Cookson (1954). He found that species of *Filicinae* and *Vulgares* (i.e. subg. *Aculeiferum*) have pollen with pores, as many as there are sides, placed towards the angles of the monads; species of *Pulchellae, Botrycephalae* and *Phyllodineae* (subg. *Heterophyllum*) have pollen with pores and furrows, the pores placed towards the angles; and the *Gummiferae* (subg. *Acacia*) with pores fewer in number than the number of sides, placed on the distal faces of the monads. On pollen morphology alone a few species of sub. *Heterophyllum* would be placed in subg. *Aculeiferum* but by and large differences in pollen are correlated with other morphological characters.

The polyads usually contain 16 pollen grain. There are departures from the norm, however, some of which may have some taxonomic significance. The polyad of four large pollen grains found in *A. baueri* is specially interesting and further investigation of *Lycopodiifoliae* is indicated.

PODS. (Figure 10) A feature of Acacia is the great diversity of its pods. If undue weight is given to differences in pods and the similarities in so many other characters disregarded, then many segregate genera might be recognized for the genus in Australia, as was done by Britton and Rose (1928) for American species. A classification based entirely on pods would lead to the dissociation of some species which other morphological characters suggest are related. In some cases, however, characters of the pod may prove useful in delimiting subseries.

Bentham (1864) commented that "in the majority of specimens gathered, the pod is neglected by collectors". Less than a fifth of the collections at BRI include fruit. For some common coastal species which fruit regularly, such as *A. fimbriata* and *A. podalyriifolia,* this is due to the neglect of collectors, probably because flowering plants are conspicuous and fruiting ones are not. Fruiting material of other species, have not been available to collectors. Johnson (1964) and Preece (1971b) discussed the irregular fruiting of the widespread and conspicuous species *A. harpophylla* and *A. aneura* respectively.

The great majority of the species of *Acacia* found in Queensland have flat linear dehiscent pods with seeds arranged longitudinally. The valves are sometimes, as in *A. concurrens, A. leiocalyx* and *A. maidenii,* rather fleshy when immature, but the valves of the pods of all species are coriaceous or woody when mature. Linear pods are straight or coiled, usually irregularly so, but the pods of *A. solandri* (Fig. 10e) are regularly coiled and the valves of those of *A. cincinnata* (Fig. 10c) are fused, forming a solid spiral. Pods are sometimes constricted where seeds have aborted but some species (e.g. *A. coriacea, A. torulosa*) have regularly moniliform pods (Fig. 10g). The pods of *A. stenophylla* (Fig. 10h) are tardily dehiscent and are strongly constricted between the seeds. The pods usually break into single-seeded loments. The pods of *A. pendula* (Fig. 10k) and at least some variants of *A. aneura* are thin and have a dorsal wing.

Species with flat pods with transversely arranged seeds are not common but they occur in some Queensland species. Species closely related to each other (*A. brunioides* and *A. conferta; A. dictyophleba* and *A. melleodora; A. flavescens, A. platycarpa* and *A. rothii; A. aulacocarpa* and *A. crassicarpa*) have pods with transverse seeds (Fig. 10j, l, m). Other species with transverse seeds are presumably taxonomically isolated, at least from other Queensland species, though, considering the overall resemblance of *A. podalyriifolia,* with transverse seeds, to *A. jucunda* and *A. uncifera,* with longitudinal seeds, this may not always be true.

A. leptostachya has pods of two types—a narrow pod with longitudinal seeds and a broader one with transverse seeds. The diversity of pods as well as floral and foliage characters suggests that there are more than one species may be included in *A. leptostachya* but so few specimens include pods that it has not been possible to establish correlation among the different characters.

Flat pods either with longitudinally or transversely arranged seeds occur in species throughout subg. *Acacia* and *Heterophyllum,* but two distinctive types of pod are found mostly in section *Juliflorae.* A few species, notably *A. stipuligera, A. acradenia, A. julifera* and *A. curvinervia* have linear more or less straight pods

terete in cross section (Fig. 10f) while the pods of *A. brachystachya* and *A. ramulosa* are somewhat broader than thick but definitely not flattened. The pods of *A. umbellata* are also more or less terete but short.

The other pod is flat, broadest at the top and tapers regularly to the base which is often without seeds for some distance. The valves are hard, almost woody and often transversely veined. At maturity the valves separate at the apex and roll back releasing the seeds or leaving the seeds suspended on the funicle, see figure of *A. australis* (= *A. calyculata*) in van der Pijl (1972). The seeds are arranged longitudinally or obliquely in the pod. Species with such triangular pods are: *A. argyrea, A. brevifolia, A. limbata, A. calyculata, A. conjunctifolia, A. hilliana* and *A. orthocarpa. A. whitei* (Fig. 10d) and *A. hyaloneura* have pods which dehisce in a similar way but they are not noticeably tapered at the base.

SEEDS. Characters of the seeds are useful in the taxonomy of *Acacia* but they have only limited value as only a small proportion of the small number of specimens with pods have mature seeds. Vassal (1971) examined seeds of 127 species of *Acacia,* 84 of which occur in Australia, most of them in subg. *Heterophyllum.* On the whole the seeds of species of subg. *Heterophyllum* were found to be smaller than those of subg. *Aculeiferum* and *Acacia. A. peuce* has exceptionally large seeds. Vassal found a wide range of sizes in the *Juliflorae* and *Plurinerves,* but a narrower range in the *Phyllodineae.* Seeds of the *Botrycephalae* are similar in size to those of the Racemosae group of the *Phyllodineae.* The size of the areole, the area enclosed by the pleurogram (Corner 1951), in relation to the size of the seed, and whether it is open or closed were found to be more or less constant for each species. The areole has been found to be a character of some importance in the taxonomy of *Acacia* (Brenan 1959). Vassal defined four major types of funicle, depending on their thickness and the extent of their encircling the seed. All four types are found in subg. *Heterophyllum* and the funicle could be of great value in distinguishing species and in defining relationships between groups of species.

Delimitation of Species

In his discussion of the species-concept in *Quercus,* Burger (1975) pointed out that, ideally, the biological species and the plants included under a binomial should be identical. Biological species consist of systems of populations separate from each other by at least partial discontinuities which must have a genetic base (Stebbins 1950). In many plants data, either field or experimental, are insufficient for the adoption of the biological species-concept.

In the absence of genetic data I have tried to use the category of species as it has been used over the past two centuries. I have been influenced by the concepts of Morton (1966) and the discussion of Fisher (1965). It should be specially noted that a subspecies has a geographical or ecological range distinct from those of other subspecies, but that in part of its range it may not be distinguishable from other subspecies.

In some cases a variant of a species may be considered worthy of recognition but no decision can be made regarding its rank. Though this situation exists it is not considered a valid argument for having only one infraspecific category as was proposed by Raven (1974). I believe both the categories "subspecies" and "variety" are useful and have used both.

Some wide ranging species show more or less clinal variation over a wide area, variation difficult to deal with in an orthodox system of nomenclature. An extreme example is *A. bivenosa,* the variation of which has been studied mainly from herbarium specimens (Pedley 1977) but variation of a similar sort occurs in *A. arida*. In the northern part of Western Australia *A. arida* has flat minutely pustulate phyllodes up to 5 mm wide. There is a more or less regular reduction in width as one proceeds eastward. *A. orthocarpa* which is a species to some extent maintained for convenience represents the extreme of the variation. Variation of a similar type occurs in *A. translucens* and *A. wickhamii.*

The variation of some species does not appear to be regular, possibly because sufficient data are not available. One such species is *A. aneura.* There is some suggestion (Pedley 1973) that on the eastern edge of its range in Queensland the variation of *A. aneura* has some regularity, possibly linked with polyploidy, but the variation of the species in Western Australia and the Northern Territory is seemingly irregular. The variation of other species of arid areas, such as *A. brachystachya* and *A. ramulosa* and of tropical coastal areas such as *A. holosericea* and *A. torulosa,* also require investigation.

Acacia leiocalyx is widespread, exhibiting a considerable range of variation, particularly in length of flowering spikes, time of flowering and, to some extent, indumentum of the calyx. Two subspecies have been recognised in Queensland but the species extends southward to about the latitude of Sydney and other subspecies may occur in the southern part of its range. *A. penninervis* also has a wide range in Queensland and New South Wales and a variant from south-eastern Queensland has been recognised as a variety, mainly because there is a name for it in this rank. The species, however, is not well understood and the range and geographical extent of variation should be studied, particularly in inland parts of its entire range.

Naturally occurring hybrids of *Acacia* are rare in Queensland. One specimen (Tugun, *White* 7112) probably represents a hybrid between *A. obtusifolia* and *A. sophorae* in a habitat somewhat in between those of the parent species. The area has been altered to such an extent since the specimen was collected that it is unlikely that similar plants occur there now. Specimens (*Johnson* 893, *Young* s.n) collected between Mundubbera and Brovinia Creek, Burnett District, appear to represent an *A. bancroftii* × *A. macradenia* hybrid. In cultivation hybrids of section *Botrycephalae* are frequently found. *A. decurrens* and *A. baileyana* which are naturalized in cooler parts of southern Queensland, are frequently involved in such crosses.

Cytology

Most species of *Acacia* have a diploid complement of 26 chromosomes (Darlington & Wylie 1955) and, though less than one per cent of the species have been examined, it seems that polyploids are much more common in subgenus *Acacia* than in other subgenera. Ross (1973) discussed the significance of this for African species. All species of subgenus *Heterophyllum* have 2n=26 except *A. koa, A. heterophylla, A. brachystachya,* and *A. aneura* (2n=52), *A. sowdenii* (2n=38), and *A. deanei* subsp. *paucijuga* (2n=39) (Hamant *et al.* 1975, Briggs in Tindale 1966, Pedley 1973). Except for the pantropical *A. farnesiana* and the naturalized *A. nilotica,* both of which have 2n=52, there are no available data for Australian species of subgenus *Acacia.*

The relationship between chromosome number and ecological preference demonstrated for *Eremophila glabra* by Ey & Barlow (1972) may also apply to some species of *Acacia*. If postulations regarding the evolution and diversification of *A. aneura* (Pedley 1973) are correct then polyploids might be expected not only in *A. aneura* and *A. brachystachya* but in other species with wide ranges in arid parts of Australia.

Khan (1951) noted that the chromosomes of *Acacia* are small, between *ca* 1 and 3 μ long and that those of the few species of subg. *Heterophyllum* studied tended to be longer than those other subgenera. Khan's general findings were confirmed by the more detailed studies of Vassal and Lescanne (1976).

Ecology

It is noteworthy that, though communities in which eucalypts predominate are widespread in Australia, they are absent in northern areas where annual rainfall is less than 600 mm, except where there is extra run-on water (Pryor 1959). In these semi-arid and arid areas *Acacia* spp. are the predominant woody plants. Some species such as *A. aneura, A. argyrodendron, A. cambagei, A. georginae* and *A. harpophylla* form extensive, almost pure stands. In a large area of south-western Queensland studied by Boyland (1974) 25 species of *Acacia* were found and only 12 species of eucalypts.

Acacia occurs virtually throughout Queensland, being scarce or absent only in most rainforests and in grasslands on fine-textured soils. Though the range of the genus is not therefore limited by environmental factors, the distribution of individual species or groups of species is sometimes correlated with environmental factors. Some broad patterns of distribution (*Juliflorae* and *Lycopodiifoliae* mainly in the north; *Botrycephalae* in the south-east) have been determined as much by past climatic and edaphic factors as by present ones.

One of the most important factors determining the distribution of perennial plants is the availability of water. Species such as *A. binervata, A. maidenii, A. melanoxylon* and *A. oshanesii* are confined to areas of high rainfall whereas others including *A. clivicola, A. ensifolia, A. peuce* and *A. tetragonophylla* occur in arid areas. The season when rain falls and the length and severity of the dry season, as well as other climatic and edaphic factors, are also significant. Farmer *et al.* (1947) related the distribution of *A. aneura, A. cambagei, A. cana, A. harpophylla* and *A. pendula* to the incidence of summer and winter rain, and Nix and Austin (1973) who used more complex systems of analysis showed that *A. aneura* is absent from semi-arid regions with a regular summer or winter drought. A feature of the climate of much of northern Australia is the marked seasonality of the rainfall, and the ranges of species such as *A. galioides* and other *Lycopodiifoliae, A. argyrodendron, A. simsii* and *A. platycarpa* may be determined by the length of the dry season.

The effect of rainfall is most pronounced in arid and semi-arid areas but even in wetter parts of the state the distribution of some, *Acacia mangium,* for example, is restricted to parts of north-eastern Queensland where rainfall is high and there is no appreciable period of drought.

Just as eucalypt communities (noteably, those in which *Eucalyptus microtheca* predominate) penetrate into arid and semi-arid regions in places where extra water is available, species of *Acacia* also occur outside their normal ranges where there are favourable "run-on" sites in arid regions. The availability of water often determines the distribution of species within plant communities,

especially in arid and semi-arid areas (Perry 1970). *Acacia cambagei* is, on the whole, a more xeric species than *A. harpophylla* and where the two occur together, such as in the basin of the Suttor, *A. harpophylla* occupies moister sites on stream lines or on the edges of gilgais.

Low and irregular rainfall is usually correlated with high average temperatures and the effect of temperature alone is often not easy to determine. There is evidence that high soil temperatures are possibly lethal to seedlings of some Acacias and may inhibit seed germination (*see* Burrows 1973). In arid regions regeneration may therefore be confined to areas protected from direct solar radiation by leaf litter, logs, etc. Groving of *A. aneura* may be maintained by the survival of seedlings within, but not between groves, and the association of *A. leptostachya* and *A. melleodora* with groves of *Eucalyptus similis* near Lake Buchanan may also be due to high soil temperatures between groves.

The effect of low temperatures is not as obvious as the effects of high temperatures. The coldest part of the state, the area with the highest incidence of frost, is country above 750 m in the vicinity of Stanthorpe. *A. dawsonii, A. filicifolia, A. rubida* and *A. stricta* and other species widespread in temperate Australia are confined to this part of Queensland but, as the area of high land more or less coincides with an area of sandy soil derived from granite, edaphic as well as climatic factors may be significant. Incidence of frost within a small area may influence the local distribution of species, but the distribution of *Acacia* generally is not known in sufficient detail for any inferences to be made.

In Queensland most species of *Acacia* favour coarse textured, well drained, infertile soils and edaphic factors must therefore determine the ranges of many species. *A. bivenosa* subsp. *wayi* and *A. dictyophleba* are more or less confined to sand dunes in the south-western part of the state. Except for *A. sophorae* which occurs south of about Maroochydore no species is restricted to coastal dunes. Species such as *A. flavescens* and *A. julifera* which occupy this ecological niche are widespread on free draining coastal sands generally. A few species, e.g. *A. baueri, A. pubirhachis* and *A. ulicifolia* occur in coastal heaths on sandy soil that is often water-logged for long periods. Despite the tendency of *Acacia* to occur on coarse textured soils some wide ranging and economically important species are restricted to clay soils. Notable are *A. argyrodendron, A. cana, A. cambagei, A. harpophylla, A. melvillei* and *A. pendula,* all belonging to the Microneurae group of the *Plurinerves,* and *A. victoriae* and sometimes *A. salicina,* both *Phyllodineae.* These species are often found in pure stands close to grasslands and in some cases encroaching on grasslands.

Other soil characteristics, particularly parent material, seem at times to be important in determining species distribution, though consideration of a single soil factor distinct from others is impossible. Some species are associated with deeply weathered rocks on scarps, remnants of the Tertiary land surface, that are widespread in semi-arid parts of Queensland (Gunn 1967; Boyland 1973). These species sometimes form short catenary sequences and their position relative to other plant communities can often be predicted with some accuracy. The best development of these catenas is along the Grey Range. *A. clivicola* occurs on shallow lithosols on dissected tops of hills while down the scarps there is a sequence: *A. petraea, A. ensifolia, A. catenulata* and *A. microsperma.* Species of the catena have different geographic ranges so that different sequences are found in different parts of Queensland. Other species that indicate deep weathering of rocks are: *A. aprepta, A. shirleyi, A. microcephala* and possibly *A. rhodoxylon.*

Francis (1951) stated that only *A. bakeri* and, with some doubt, *A. aulacocarpa* assumed the qualities of rainforest tree types in Australia. He did however include in his work *A. melanoxylon* and *A. fasciculifera.* Webb and Tracey (*in* Pedley and Isbell 1971) recorded *A. aulacocarpa* in drier and depauperate rainforest types on steep upper slopes of the McIlwraith Range, and *A. cincinnata* and *A. mangium* also occur in similar situations in other parts of northern Queensland. The absence of *Acacia* spp. from rainforests is probably due to their intolerance of low light intensities. In south-eastern Queensland *A. melanoxylon* is a pioneer regrowth species after rainforest has been cleared (Williams *et al.* 1969) but it is not found as a consituent of mature rainforest. That it does grow on sites previously occupied by rainforest indicates that it tolerates relatively high soil fertility. Clearing of rainforest or eucalypt forest often results in dense regrowth of *A. aulacocarpa* and *A. concurrens* in the south, and *A. crassicarpa* and *A. flavescens* in the north. Such regrowth may be due in part to the increased light intensity when the tree layer is removed.

Except in arid areas where not enough fuel accumulates to sustain them, wildfires occur more or less regularly wherever *Acacia* grows. In many parts of coastal Queensland fires are an annual occurrence. Severe fires kill all but the largest trees but regeneration is usually rapid, from seed for most species, but from root suckers for *A. argyrodendron* and *A. harpophylla.* Most species of *Acacia* have hard seeds with a coat impervious to water (*see* Ching 1971, for *Acacia confusa*). Germination depends on the breakdown of the seed coat, usually over a period of years, with a consequent germination spread over a long period. Heat treatment breaks the impermeability of the seed coat. After a fire there may be a mass germination of seeds. Near Brisbane 75 seedlings in an area slightly less than a metre square were seen in a recently burnt area beneath a tree of *A. podalyriifolia.* A striking case of mass germination of *A. torulosa* in a relatively undisturbed community has been reported by Webb *et al.* (1974). The seeds of *A. harpophylla* and *A. argyrodendron* are unusual. They lack an impervious testa and rapidly lose their viability (Johnson 1964). Regeneration of both species is usually from regrowth with develops from roots.

Because of mass germination of seed following fire and because many species are heliophilous, dense stands of Acacia often form on newly cleared and burnt land. Grazing by domestic animals may control this growth but dense thickets are formed on roadsides. Often plants are much more abundant on roadsides than they are in adjacent undisturbed or grazed communities.

The activities of man have had a considerable effect on the abundance and geographic range of some species. Possibly the most drastic of these activities has been the deliberate clearing of land for agricultural and pastoral activities. In the period 1963–1968 about 190 000 hectares of vegetation dominated by *A. harpophylla* was "pulled" (cleared by pulling with heavy machinery) in the basin of the Fitzroy River (Anon. 1968). Undisturbed plant communities are now difficult to find in such areas but many plants of *A. harpophylla* remain along roadsides and in shade and shelter belts. There has been a great reduction in the abundance of *A. harpophylla* with little reduction in the overall range of the species. Clearing of vegetation has most affected species that grow in extensive, more or less pure stands, such as *A. aneura, A. argyrodendron,* and *A. cambagei* and there is a need for conservation of untouched areas of such species.

In coastal near urban areas diminution of the ranges of a few species has occurred where their habitats have been affected by clearing and drainage

operations associated with housing developments. The persistence of *A. baueri, A. attenuata* and other species of wet coastal heath south of Brisbane, is in doubt.

Cultivation of some species has resulted in extension of their ranges. *A. decurrens* is adventive near Toowoomba and Stanthorpe. Because of the extensive cultivation of *A. podalyriifolia* it is now difficult to determine whether some occurrences of the species in the Brisbane area are natural. This species is also well established at Herberton probably the result of a garden escape. A few plants of *A. spectabilis,* another species widely grown as an ornamental, grow spontaneously on a roadside in the Brisbane area and further spread of the species is likely.

Reproduction and Dispersal

TIME OF FLOWERING. The majority of Queensland species of Acacia flower at the same time each year regardless of weather conditions prior to flowering, possibly a photoperiodic response. Many species flower in the period June to September, the driest part of the year in most of the state. Most species flower for a relatively short time, often less than six weeks, but some have long periods of flowering. In south-eastern Queensland *A. maidenii* and *A. penninervis,* may flower over a period of four months during the summer.

Some species flower in response to rain if temperatures are high enough. In cultivation in Brisbane *A. deanei* and *A. oshanesii* flower almost continuously. *A. harpophylla* usually flowers from June to September, but if soil moisture is low it may not flower at all. Other species of drier parts of the state have similar behaviour. Preece (1971a) found herbarium specimens of *A. aneura* with flowers for every month of the year but from experimental work he concluded that at his study site, near White Cliffs, N.S.W. (30°5′S 143°04′E) rain falling in spring and late summer induced flowering.

The strictly seasonal and more faculative flowering may be related in some way to the two types of shoot growth phases reported by Maconochie (1973). He found that one group of plants, including *A. ligulata, A. murrayana, A. sowdenii* and *A. victoriae,* seemed to produce new growth after spring flowering, while a second group, *A. aneura* and *A. kempeana* included, exhibited seasonal growth if soil moisture were available and also a growth response to summer rain. All but one of the Acacias of the first group are *Phyllodineae* and both of the second group *Juliflorae.* The two types of growth behaviour may reflect either a difference in the geographical origin of the groups or a fundamental physiological difference between the groups. Considerably more data are required.

Heithaus *et al.* (1974) suggested that andromonoecism which is characteristic of many species of *Acacia* might be associated with specialization for pollination by pollen vectors that are large relative to stigma size. Pollination in *Acacia,* however, appears to be effected by insects not particularly large in relation to the size of the stigma.

Solbrig and Cantino (1975) found that for several species of *Prosopis,* a related mimosoid genus with spicate inflorescences, only two or three flowers in every thousand developed fruit. This would also be true of many species of *Acacia* in Queensland. They postulated that the production of a large number of flowers is an adaption that serves to attract insects to individually small flowers. They could only speculate why so few flowers produced fruit, though clearly there

is an upper limit to the amount of photosynthate that plants can use to produce seeds. If every hermaphrodite flower were to produce a pod the yield of seed would be extremely high and beyond the capacity of the plant. Despite the relatively few pods formed the seed yield of individual trees of *Prosopis* and *Acacia* is high. In Central America Jantzen (1969a) found that nine plants of *A. farnesiana* with canopies ranging in size from 0·5 to 1·8 m^3 yielded 83–6647 seeds (6–252 gr).

Despite the fact that insects are used in the control of undesirable plants, plant ecologists have to a large extent ignored the effects of insects in determining the composition of plant communities (Bullock 1967). The destruction of the seeds of legumes is important in the regulation of adult plant population density. The predation of bruchids (Bruchidae, "seed weevils") on the seeds of Central American legumes has resulted in different adaptive strategies among parasitized and non-parasitized species (Jantzen 1969a). Bruchids are not significant parasites of *Acacia* in Australia though seeds are, of course, eaten by other insects.

There has been considerable speculation but little data on the dispersal of seeds of *Acacia.* Jantzen (1969b, 1974), in his study of the biology of the swollen-thorn Acacias of Central America, found some species to be effectively distributed by birds. The seeds of these species are enclosed in a sweet white to yellow pulp or aril and in most species the pod opens to expose the pulp when ripe. The presentation of seeds on hanging funicles was considered by van der Pijl (1972) as evidence that they were dispersed by birds. He figured *A. australis* (= *A. calyculata*) and *A. falcata* (with "juicy, folded funicles"). Middlemiss (1963) found that in South Africa seeds of *A. cyclops,* an Australian species naturalized there, were eaten and passed whole by ten species of birds. Some were wide ranging and likely to be efficient agents of dispersal. Four of the ten were doves (Columbidae). In Australia seeds of *Acacia* are eaten by some species of pigeon (Lea and Gray 1935, Frith and Barker 1975, Frith *et al.* 1974, 1976) and probably are vectors in their dispersal. Parrots (Psittacidae) eat seeds of *Acacia* (Lea and Gray 1935) but it is doubtful whether they would be passed whole by most species. I have seen mature seeds of *A. maidenii* eaten by lorikeets (*Trichoglossus chlorolepidotus*) which have tongues adapted to the gathering of pollen and nectar and may therefore be less effective in crushing and digesting seeds than other species that habitually eat seeds. If birds disperse seeds then plants with red or orange arils, such as *A. auriculiformis, A. oraria* and *A. salicina,* may have an adaptive advantage. On the basis of the observed dispersal of five species and the study of the morphology of 13 other species Berg (1975) considered about 300 species of Australian species of *Acacia* were probably dispersed by ants. The data presented do not warrant such sweeping conclusions. There is a suggestion (unpublished reports, Queensland Department of Primary Industries) that seeds of *A. nilotica* are spread by cattle and goats. More information is needed on the dispersal of seeds by herbivores, especially native ones, as well as by birds and ants.

The role of animals in the dispersal of *Acacia* is probably minor. Most seeds fall to the ground beneath the parent trees or are projected a short distance by the explosive dehiscence of the pods. Seeds of plants, such as *A. aulacocarpa, A. salicina* and *A. stenophylla,* which grow along streams must be dispersed by water, but they are not specially adapted for it. The lack of special dispersal mechanisms supports the hypothesis that *Acacia* did not come to Australia from Asia across rather wide sea barriers but it makes the presence of members of subg. *Heterophyllum* in the Hawaiian islands difficult to account for.

Common names

One of the aims of the International Code of Botanical Nomenclature is the stabilization of botanical names, and though this has not been completely achieved, scientific names are more stable than common ones. In Australia "Wattle" is the name generally applied to species of *Acacia* especially those with showy flowers. The name may be qualified in various ways e.g. black wattle, silver wattle, green wattle, etc., but many species have no common name and some names are applied rather haphazardly. The names of even common species are different in different parts of their ranges, and one common name may be applied to more than one species. In New South Wales *A. pendula* is known as "boree" and in Queensland as "myall" while the name "boree" in Queensland refers to *A. cana* and "myall" in South Australia is *A. sowdenii*. Lancewood is the name almost invariably associated with *A. shirleyi* but other species such as *A. burrowii, A. petraea, A. sparsiflora* and *A. torulosa* which sometimes form dense stands of slender unbranched trees are also known in some areas as lancewood.

Many species from inland Queensland have well known common names often derived from aboriginal names. Many are species of the Microneurae group and are economically important; namely, gidgee (*A. cambagei*), brigalow (*A. harpophylla*), myall (*A. pendula*), Georgina gidgee (*A. georginae*), boree (*A. cana*), bowyakka (*A. microsperma*) and womal (*A. maranoensis*). Equally well known are mulga (*A. aneura*), bendee (*A. catenulata*) and mineritchie (*A. cyperophylla*) which are all members of the *Juliflorae*.

Notes on text

The work is based largely on collections in the Queensland Herbarium (BRI). Specimens from other herbaria have been examined but are only occasionally cited. Where they are, the usual acronyms are used to indicate herbaria. The type specimens cited have been examined, except where otherwise indicated.

I have cited only a few specimens of each species. These are intended to indicate broadly the geographic ranges of the species in Queensland, and are as far as possible, specimens with duplicates in large European herbaria. All collections at BRI are listed in the index to collectors. No distribution maps are given but it is hoped that these will be presented in a separate paper on the distribution of *Acacia* in Queensland.

In the citation of specimens localities are listed under pastoral districts (see map on inside back cover). As well as these precisely delimited areas a number of more general localities are mentioned—south-eastern Queensland: Leichhardt district south of about 25°S latitude, Burnett, Wide Bay, Darling Downs and Moreton Districts; north-western Queensland: Burke District west of about 141°E longitude; north Queensland: Queensland north of about 20°S latitude; south-western Queensland: Gregory South and Warrego districts west of about 146°E longitude; Granite Belt: elevated granite country around Stanthorpe (*see* Pedley 1976).

Key to Queensland species of *Acacia*

Key to groups

The groups to a large degree are equivalent to the sections and subgenera recognized (see p. 81). The corresponding sections are indicated in parentheses.

1. Mature plants bearing phyllodes. Pinnate and bipinnate leaves found only on seedlings or on "reversion" shoots on old plants, rarely persisting for several years and then rarely flowering when only bipinnate foliage present. 2.

   Plants with bipinnate leaves only, never with phyllodes. 7.

2. Flowers in heads 3.

   Flowers in spikes **Group I.** (Section *Juliflorae*)

3. Phyllodes ± terete, in regular whorls of 5–27, whorls sometimes oblique; prominent stipules alternating with the phyllodes **Group III.** (Section *Lycopodiifoliae*)

   Phyllodes not in regular whorls, occasionally in groups of 3–4, usually flat when dry, occasionally terete or quadrangular in cross section 4.

4. Phyllodes either ± triangular, short (less than 1·5 cm long) the lower margin straight, the upper concave, often with a gland at the broadest part, or broadest at the base and tapering gradually to a pungent point, or broadest in lower quarter and upper margin ± abruptly contracted so that phyllode tapers into rather long pungent point; heads on axillary peduncles. **Group IV.** (Sections *Phyllodineae* and *Plurinerves,* in part)

   Phyllodes often more than 1·5 cm long, not triangular or if so, then heads in racemes. 5.

5. Phyllodes terete, subterete or quadrangular in section, or flat and narrow without prominent nerves but sometimes with obscure translucent longitudinal nerves, or longitudinally folded. **Group V.** (Section *Phyllodineae,* in part)

   Phyllodes terete or flat, with many longitudinal nerves when terete or with at least one longitudinal nerve when flat 6.

6. Phyllodes flat, uninerved, sometimes with secondary longitudinal nerve developed. **Group VI.** (Section *Phyllodineae,* in part)

   Phyllodes plurinerved, terete or flat. **Group II.** (Section *Plurinerves*)

7. Stipules inconspicuous, not spinose; flowers in heads arranged in racemes in the upper axils or forming terminal panicles. **Group VII.** (Section *Botrycephalae*)

   Plants with either stipular spines (at least when young) or with prickles; flowers in heads or in spikes on peduncles single or in groups in the axils 8.

8. Trees or shrubs with stipular spines; flowers in heads or in spikes **Group VIII.** (subgenus *Acacia*)

   Lianes with prickles on the stems; flowers in heads **Group IX.** (subgenus *Aculeiferum*)

GROUP I

1. Phyllodes decurrent on stem for some distance, pungent pointed — 1. *A. triptera*
   Phyllodes articulate on stem, not broadly decurrent — 2.

2. Phyllodes terete or flattened, less than 2·5 mm wide and more than 20 times as long as wide, longitudinally striate or ribbed, nerves not anastomosing, or without nerves and punctulate — 3.
   Phyllodes more than 2·5 mm wide, or if narrower then less than 20 times as long as wide, longitudinally striate, the nerves sometimes anastomosing — 18.

3. Phyllodes less than 5 cm long — 4.
   Phyllodes more than 5 cm long — 6.

4. Stipules prominent, branchlets very resinous; phyllodes with 2 prominent longitudinal nerves — 2. *A. chisholmii*
   Stipules not prominent, early deciduous; branchlets not very resinous; many parallel longitudinal nerves, all equally prominent or at least more than two nerves more prominent — 5.

5. Branchlets and phyllodes usually with silvery indumentum. Calyx with free spathulate lobes; pod flat more or less winged — 10. *A. aneura*
   Branchlets glabrous (sometimes scurfy); calyx not deeply lobed; pod flat but raised over seeds alternately on each side — 45. *A. clivicola*

6. Phyllodes more or less terete, punctulate, resinous; pod flat and woody, attenuate at the base and opening elastically from the top — 3. *A. orthocarpa*
   Phyllodes flat or terete, finely striate, or distinctly nerved, not punctulate; pod flat or cylindrical, not opening elastically — 7.

7. Branchlets with long silky hairs, becoming glabrous; phyllodes usually with similar hairs at least at base and apex, rather flexuose, 13–18 cm long; spikes less than 1 cm long — 4. *A. curranii*
   Branchlets glabrous or with short appressed hairs; phyllodes without silky hairs, often shorter; spikes (except in *A. granitica*) longer — 8.

8. Phyllodes terete, rather sharp pointed — 5. *A. cyperophylla*
   Phyllodes subterete or flat, not sharp pointed — 9.

9. Calyx divided ± to base; branchlets often with appressed hairs or greyish bloom; phyllodes often with minute appressed hairs — 10.
   Calyx truncate sinuolate, or lobed, but not lobed to middle, branchlets glabrous, rarely scurfy and sometimes glutinous, phyllodes glabrous — 13.

10. Pods leaf-like, flat, winged (the wing up to 2 mm wide, sometimes quite rudimentary); calyx lobes free to base, linear but slightly thickened and expanded at apex — 10. *A. aneura*
    Pods not leaf-like and winged, sometimes cylindrical and thick; lobes of calyx shortly united at base so that it can usually be dissected from flower intact — 11.

11. Phyllodes not particularly thick, one nerve distinctly more prominent than the rest — 9. *A. tanumbirinensis*
    Phyllodes thick, sometimes terete with many parallel equally prominent nerves — 12.

12. Phyllodes often terete, occasionally flat but thick; pod cylindrical, 7–9 cm long, longitudinally nerved — 11. *A. ramulosa*
    Phyllodes thick but flat (? never terete); pod rather turgid, thickened (up to 2·5 mm thick), 3–6 cm long — 12. *A. brachystachya*

13. Spikes less than 1 cm long on peduncles 0·5–2 mm long; phyllodes 10–20 cm long — 13. *A. granitica*
    Spikes more than 1 cm long or peduncles 5–17 mm long; phyllodes 5-18 cm long (If (2–)3–5 spikes on axillary axis 4–8 mm or more long—see couplet 43) — 14.

14. Phyllodes up to 1·6 mm wide, all longitudinal nerves equally prominent or more than one more prominent 15.

    Phyllodes more than 2 mm wide, one longitudinal nerve more prominent than the rest 16.

15. Phyllodes 0·7–1·1(–1·3) mm wide, all nerves equally prominent; branchlets more or less terete with resinous ribs 6. *A. tenuissima*

    Phyllodes up to 1·6 mm wide with distinct marginal nerves and 2 raised nerves on each face with a faint nerve between them 7. *A. jackesiana*

16. Peduncles 1–1·5 cm long; calyx 0·6 mm long, *ca* ½ as long as corolla 8. *A. guymeri*

    Peduncles less than 1 cm long; calyx 0·7–1·1 mm long, usually at least half as long as calyx 17.

17. Calyx 0·7–1·1 mm long with lobes 0·2–0·3 mm long; peduncles 1–4 mm long; elongate areole ¾ as long as seed 14. *A. caroleae*

    Calyx 1·0–1·1 mm long truncate or slightly incurved at top; peduncles *ca* 7 mm long; areole pale, semi-circular 15. *A. adsurgens*

18. Phyllodes less than 4 cm long and less than 4 mm wide 19.

    Phyllodes either more than 4 cm long or more than 4 mm wide 22.

19. Branchlets glutinous sometimes with scattered appressed hairs often obscured by the resin; phyllodes with secondary nerves obscure or translucent; spikes dense on peduncles 1–2 cm long 20.

    Branchlets glabrous; phyllodes with 1–3 prominent longitudinal nerves, the secondary nerves definite or absent, not translucent; peduncles often shorter 21.

20. Phyllodes with 2 prominent longitudinal nerves; pod flat, obliquely veined, not attenuate at the base nor opening elastically from the apex 16. *A. lysiphloia*

    Phyllodes usually with many parallel nerves sometimes 3 slightly more prominent; pod flat but woody, attenuate at the base and opening elastically from the apex 17. *A. hilliana*

21. Phyllodes single, in 2's or 3's; spikes not very dense on peduncles less than 7 mm long; pod winged on adaxial margin 18. *A. conjunctifolia*

    Phyllodes never in groups; spikes dense on peduncles 6–17 mm long; pod not winged 19. *A. wickhamii*

22. Phyllodes with parallel longitudinal nerves, not anastomosing, sometimes obscure (see Fig. 8b) 23.

    Phyllodes with definitely anastomosing nerves, usually conspicuously so but in *A. brassii* and *A. auriculiformis* only slightly so (and in *A. limbata* usually only at base and apex) (see Fig. 8d) 66.

23. Phyllodes 0·5–2 cm × 2·5–7 mm, 1–6 times as long as wide; margins more or less undulate especially when broad, glabrous 19. *A. wickhamii*

    Phyllodes either pubescent, or, more than 6 times as long as wide, or if less than 6 times as long as wide, then more than 2 cm long or more than 6 mm wide; margins not undulate 24.

24. Phyllodes less than 6 times as long as wide, or if slightly longer then with indumentum of rather spreading hairs; usually more than 1 cm wide, with numerous rather crowded parallel longitudinal nerves (at least when dry), the nerves not hidden in the tissue of the phyllode; pods usually narrow with longitudinal seeds, if broad and transversely nerved then opening elastically from the apex 25.

    Phyllodes more than 6 times as long as wide, glabrous or with indumentum of appressed hairs, if spreading hairs then more than 10 times as long as wide, nervature various; pods various, including narrow and opening elastically from the apex and broad sometimes transversely veined but not opening elastically from the apex 34.

25. Phyllodes on mature plants markedly pubescent; spikes on pubescent peduncles up to 3 mm long 26.

    Phyllodes on mature plants glabrous or with rather sparse indumentum at base; spikes usually on longer peduncles 27.

26. Spikes sessile; calyx 0·5 mm long, more or less truncate; pods flat *ca* 4 mm broad 20. *A. pubifolia*
Spikes shortly pedunculate; calyx *ca* 1 mm long, shortly lobed; pods terete 21. *A acradenia*

27. Branchlets terete, vernicose; phyllodes 10–16 cm × 2·5–5 cm 22. *A. laccata*
Branchlets at least slightly angular, not vernicose; phyllodes usually less than 12 cm long 28.

28. Flowers large, 3·5 mm or more long; pod woody, *ca* 8 mm wide opening elastically from apex 23. *A megalantha*
Flowers smaller, to about 2 mm long; pod usually narrow but if broad then not woody 29.

29. Branchlets coarse, angular; phyllodes ± upright paralleling the stem, usually 9–12 cm × 1·2–2 cm 24. *A. gonoclada*
Branchlets slender, sometimes angular; phyllodes usually spreading, usually 3·5–10 cm × 0·6–3 cm 30.

30. Phyllodes 3·5–7 cm long, somewhat falcate (lower as well as upper margin curved); young ones with reddish brown scurf 25. *A. curvinervia*
Phyllodes 2·5–10 cm long, more or less straight, not with red-brown scurf when young 31.

31. Phyllodes less than 5 cm long, 1·3–1·8 cm wide 26. *A. spania*
Phyllodes more than 5 cm long, 1·5–3 cm wide 32.

32. Calyx 0·9–1·1 mm long; spikes up to 3 cm long 27. *A. umbellata*
Calyx shorter; spikes 3–5 cm long 33.

33. Phyllodes ± symmetrical, elliptic (both margins concave) 28. *A. striatifolia*
Phyllodes asymmetrical, lower margin straight or convex, upper concave 29. *A. tenuinervis*

34. Branchlets pubescent with short appressed hairs (rarely long and somewhat spreading); mature phyllodes often silvery grey with indumentum of short appressed hairs or rarely longer and somewhat spreading hairs; young tips not dark; phyllodes straight or slightly falcate 35.
Branchlets of mature plants glabrous or rarely with scattered hairs; phyllodes glabrous or with scattered hairs at the base; young tips sometimes dark; phyllodes straight or markedly falcate 39.

35. Spike sessile with hirsute rachis; pod papery *ca* 1 cm wide with transverse seeds; phyllodes not silvery 30. *A. pubirhachis*
Spike on short peduncle, hairs on rachis not long; pods various, but if broad with transverse seeds then not papery 36.

36. Branchlets angular with translucent ribs; spikes 3–4 cm long; calyx membranous (0·4–) 0·6–0·75 mm long with short obtuse lobes; pods flat from 3 mm wide with longitudinal seeds to 9 mm wide with transverse seeds 31. *A. leptostachya*
Branchlets slender, angular; spikes 1–3 cm long; calyx 0·4–1·1 mm long, deeply lobed; pods flat, winged or constricted between the seeds, but seeds longitudinal 37.

37. Pod flattened but thick, calyx deeply lobed but usually 2 or 3 lobes can be dissected together 12. *A. brachystachya*
Pod flat, either winged or constricted between seeds, calyx deeply lobed, difficult to dissect anything but separate lobes 38.

38. Calyx 0·6–1·1 mm long; pod leaf-like, flat with a wing up to 2 mm broad on the dorsal edge 10. *A. aneura*
Calyx 0·4–0·7 mm long, pod flat, constricted between seeds 32. *A. catenulata*

39. Spikes subsessile, less than 1 cm long; phyllodes more than 30 times as long as wide 13. *A. granitica*

Spikes more than 1 cm long or not subsessile; phyllodes often less than 30 times as long as wide 40.

40. Phyllodes with distinct scarious mucro *ca* 4 mm long; stipules scarious; spikes on rather long peduncles (6–12 mm long) often with bracts or isolated flowers below the main spike 52. *A. hemsleyi*

Phyllodes without scarious mucro; stipules not scarious; spikes without bract or isolated flower 41.

41. 2–5 spikes on axillary shoot 4–8 mm or more long, sometimes elongating into leafy shoot; nerves of phyllode not running into margin at base nor phyllode pubescent; phyllodes up to 2 cm (rarely 2·5 cm) wide 42.

Spikes usually single or in pairs on minute axis in axils usually not long nor elongating but if so then nerves of phyllode running into margin at base or phyllodes pubescent or more than 1 cm broad 44.

42. Phyllodes linear, 2–5 mm wide, 15–60 times as long as wide 14. *A. caroleae*

Phyllodes narrow elliptic or lanceolate, straight or falcate, 4–18(–25) mm wide, 4–20 times as long as wide 43.

43. Phyllodes 4–10(–12) cm × 4–10 mm, 3·5–16(–19) times as long as wide, leaves on young plants elliptic; calyx pubescent at base 33. *A. burrowii*

Phyllodes 8–16(–19) cm × 8–18(–25) mm, 6–15(–19) times as long as wide, broader on young plants; calyx glabrous or pubescent at the base 34. *A. blakei*

44. Pods broad, woody, transversely veined, not opening elastically from the apex, more than 1·5 cm wide with transverse seeds; phyllodes 7–20 cm × 6–40 mm, up to 12 times as long as wide; young tips not dark 45.

Pods usually not woody but if so then up to 12 mm wide and opening elastically from the top; phyllodes usually less than 17 mm wide or if wider than young tips dark 46.

45. Pulvinus 4–12(–16) mm long; pods 2·5–3·5 cm wide 35. *A. crassicarpa*

Pulvinus 4–7 mm long; pods 1·5–2 cm wide 36. *A. aulacocarpa*

46. Phyllodes with prominent midribs and 3–7 widely spaced conspicuous nerves on each side of it; flowers sometimes 4-merous; calyx *ca* 1 mm long, corolla 2–3 times as long; peduncle less than 5 mm long; pod linear *ca* 7 mm wide with pale raised margines 38. *A. whitei*

Not the above combination of characters. If midrib prominent then more secondary nerves or secondary nerves obscure, or if about the same number then calyx notably membranous and more than half as long as the corolla and peduncle more than 5 mm long. Pod otherwise; if linear, then not with pale raised margins 47.

47. Calyx membranous, lobed almost to the base; phyllodes less than 5 mm wide, more than 8 cm long and more than 25 times as long as wide 9. *A. tamumbirinensis*

Calyx not lobed beyond the middle; phyllodes either more than 5 mm wide, or less than 8 cm long and 25 times as long as wide 48.

48. Spikes on peduncles more than 5 mm long; phyllodes often more than 15 times as long as wide 49.

Spikes on peduncles up to 5 mm long; phyllodes often less than 20 times as long as wide 59.

49. Phyllodes more or less straight with midnerve slightly or markedly more prominent than the rest, more than 10 cm long; branchlets and nerves and margins of phyllodes rather yellowish 50.

Phyllodes straight or falcate with more than 1 major longitudinal nerve; branchlets and nerves and margins of phyllodes usually not yellowish; or less than 10 cm long 53.

50. Calyx *ca* 1 mm long, corolla less than twice as long as calyx; phyllodes 1·5–3·5 mm broad, 20–60 times as long as broad; spike dense 1–1·5 cm long. Rare plants from tropical parts of the State 51.

Calyx to 0·75 mm long; corolla more than twice as long as the calyx; phyllodes 2·5–7(–9) mm broad, 15–45(–60) times as long as broad; spikes dense 1·5–2 cm long or only moderately dense 2–3·5 cm long. Commoner species 52.

51. Phyllodes with prominent midrib and 1–3 less prominent sometimes translucent nerves on each side of it; gland small 4–10 mm from the base; calyx membranous glabrous, loosely investing corolla 39. *A. drepanocarpa*

Phyllodes with many parallel longitudinal nerves, the middle one most prominent; gland basal, large but with a small orifice; calyx tightly appressed to the corolla, with a few hairs 15. *A. adsurgens*

52. Phyllodes with one longitudinal nerve the other obscure; spikes dense on glabrous peduncles; calyx lobes fimbriate; pod woody, 12 mm wide, attenuate at base and opening elastically from top; seeds obliquely transverse, areole closed 40. *A. ancistrocarpa*

Phyllodes with many parallel nerves, the central one slightly more prominent; spikes only moderately dense on peduncles sometimes appressed pubescent at the base; calyx lobes hirsute; pod *ca* 5 mm wide, not opening elastically from top; seeds longitudinal with small open central areole 41. *A. shirleyi*

53. Phyllodes on mature trees falcate (i.e. both upper and lower margins curved), more than 9 cm long; on young plants sometimes ovate and pubescent; spikes up to 4 cm long; pod 3–3·5 mm wide 54.

Phyllodes more or less straight, up to 16 cm long; phyllodes on young plants not pubescent; pods 3·5 mm or more wide 55.

54. Peduncles 10–15 mm long; spikes 10–25 mm long. Confined to Warrego and Gregory South Districts 42. *A. petraea*

Peduncles 5–10 mm long; spikes 20–40 mm long. More widely spread, known only from a few places in Warrego and Gregory South Districts 43. *A. sparsiflora*

55. Phyllodes greyish with many fine parallel longitudinal nerves, none more prominent than the rest, up to 5·5 cm long 56.

Phyllodes green or yellowish with usually two prominent longitudinal nerves or nerves indistinct in coriaceous phyllode; phyllodes 5–16 cm long 57.

56. Phyllodes 4–10 mm wide; spikes 10–15 mm long; pod 10–15 mm wide with seeds 3·5 × 3 mm 44. *A. kempeana*

Phyllodes 1–3 mm wide; spikes 3–7 mm long; pod 4–6·5 mm wide, rarely 10 mm, with seeds 3 × 2–2·5 mm 45. *A. clivicola*

57. Phyllodes less than 6 mm wide; pod 8 mm wide with transverse seeds 46. *A. hammondii*

Phyllodes more than 6 mm wide; pod up to 6 mm wide with longitudinal seeds 58.

58. Nerves of phyllodes indistinct; spike dense 2–3 cm long; pod not coiled 37. *A. rhodoxylon*

Nerves of phyllodes distinct, two more prominent than the rest; spike open, 3–8 cm long; pod coiled 47. *A. solandri*

59. Phyllodes with prominent midnerve and ± parallel translucent secondary nerves; pod opening elastically from apex 48. *A. hyaloneura*

Secondary nerves not translucent; if pod opening elastically then branchlets flattened 60.

60. Branchlets flattened; flowers very pale, almost white; pods opening elastically from the top 49. *A. calyculata*

Branchlets not flattened; flowers not as pale; pods various, never opening elastically 61.

61. Phyllodes with 2 nerves more prominent, 5–10 cm long; pod membranous, brown, glutinous, shining, with transverse seeds 46. *A. hammondii*

Phyllodes either with many fine parallel equally prominent nerves or with 3 more prominent (not consistently 2); pod with either longitudinal or oblique seeds or if transverse then phyllodes less than 5·5 cm long 62.

62. Pods flat 4–11 mm wide with traverse or oblique seeds; phyllodes tending to be broadest above the middle, with many fine parallel longitudinal nerves, none much more prominent than the rest, 3–8·5 cm × 2–9 mm. Young plants more or less glabrous 63.

Pods terete or flat, sometimes constricted between the seeds; phyllodes usually broadest at or below the middle with fine parallel longitudinal nerves, usually 3 more prominent than the rest, 7–25 cm × 5–27 mm. Young plants sometimes tomentose 64.

63. Spikes dense 5–12 mm long; calyx pubescent 0·6–1 mm long 56.

Spikes interrupted 6–25 mm long; calyx sericeous or ribs becoming more or less glabrous, 0·5 mm long 50. *A. aprepta*

64. Branchlets yellowish, sometimes glutinous; phyllodes straight or slightly falcate, 5–10(–13) mm wide, gland basal with rimmed orifice; pod moniliform, up to 10 cm long, 4 mm broad, narrowed to 1·5 mm 51. *A. torulosa*

Branchlets usually reddish, not glutinous; phyllodes 5–25 mm broad, strongly falcate when narrow, gland basal, inconspicuous; pod terete or flat, not moniliform 65.

65. Young plants densely pubescent. Pods terete, obscurely longitudinally wrinkled when dry; phyllodes 5–25 mm wide, strongly falcate when narrow (on mature trees) 53. *A. julifera*

Young plants often with phyllodes different from those of older plants but not pubescent; pod narrow but flat; phyllodes only occasionally strongly falcate; calyx only sinuolately lobed 43.

66. Phyllodes up to 7·5 times as long as wide either sessile or abruptly contracted into stout pulvinus 2–3 mm long; all parts of flower glabrous 67.

Phyllodes 2·5–35 times as long as wide not sessile not abruptly contracted into stout pulvinus, or all parts of flower not glabrous 68.

67. Phyllodes sessile, 8–11 cm × 2·5–4·5 cm, 2–4·5 times as long as wide; spikes on peduncles 2–5 cm long 54. *A. latifolia*

Phyllodes 7–13 cm × 1–3·5 cm, 2·5–7·5 times as long as wide on stout pulvinus 2–3 mm long; spikes on peduncles 1–2 cm long 55. *A. cretata*

68. Phyllodes with rather fine secondary nerves forming reticulum, the nerve islands elongate (more than about 3 times as long as wide), occasionally the anastomoses infrequent (e.g. *A. brassii, A. auriculiformis* and *A. solandri*) 69.

Phyllodes usually large and not elongate, with very conspicuous reticulum, the nerve islands not elongate (less than 3 times as long as wide), the nerves often yellowish and the major ones running together at the base near the lower margin; plants often pubescent 99.

69. Flowers predominantly 4–merous 70.

Flowers 5–merous 75.

70. Phyllodes coriaceous, 5–19 cm × 8–22 mm, 3–20 times as long as wide, with a prominent basal gland, 2, 3 or 5 nerves more prominent than the rest and with 3–7 longitudinal nerves between the major ones; flowers at anthesis 2·5 mm or more long; calyx glabrous 71.

Phyllodes of thinner texture; gland not prominent. Flowers at anthesis less than 2 mm long; calyx glabrous or pubescent 72.

71. Phyllodes 5–10 cm long, 3–6 times as long as wide; spikes sessile, dense, up to 3 cm long 56. *A. sophorae*

Phyllodes 8–19 cm long, 4–20 times as long as wide; spikes pedunculate, sparse, 4–6 cm long 57. *A. obtusifolia*

72. Phyllodes linear to linear-lanceolate, 6–16 cm × 1–19 mm, 14–70 times as long as wide, with a distinct midrib and 6 or fewer conspicuously widely spaced secondary nerves. Calyx ciliate, otherwise glabrous 58. *A. longissima*

Phyllodes 5–20 cm long, 5–35 times as long as wide; secondary nerves not widely spaced, more than 6 besides the midrib (if any) 73.

73. Mature phyllodes more than 1 cm wide, 10–20 cm long, 5–16 times as long as wide; branchlets lenticellate, sometimes golden pubescent. Calyx and rachis of spike golden pubescent 59. *A. maidenii*

Phyllodes less than 1 cm wide, 8–35 times as long as wide; branchlets and rachis glabrous or with white appressed hairs 74.

74. Phyllodes 5–10 cm long, 8–18 times as long as wide; branchlets and some phyllodes with appressed hairs; rachis subglabrous; calyx more or less glabrous 60. *A. floribunda*

Phyllodes 10–20 cm long, 15–35 times as long as wide, branchlets with few appressed hairs, not lenticellate; rachis glabrous, calyx hirsute 61. *A. orites*

75. Phyllodes 2·5–6 times as long as wide; peduncles 1–2·4 cm long; spikes more or less dense 1·2–2·5 cm long; pod attenuate at the base opening elastically from the top 76.

Phyllodes usually more elongate; peduncles shorter; pod neither attenuate at the base nor opening elastically from the top 78.

76. Branchlets and pods pubescent; phyllodes finely reticulate, more or less pubescent 62. *A. argyraea*

Branchlets and pods glabrous; phyllodes coarsely reticulate; glabrous 77.

77. Phyllodes 4·5–6 cm long, 2–4 times as long as wide; pods 4–5 cm long 63. *A. brevifolia*
Phyllodes 5–8 cm long, 3·3–4·5 times as long as wide; pods *ca* 6 cm long 64. *A. limbata*

78. Phyllodes less than 5 cm long, never with densely pubescent branchlets 39. *A. drepanocarpa*

Phyllodes more than 5 cm long, or if shorter then branchlets densely pubescent 79.

79. Young tips golden-yellow; branchlets with indumentum of yellow hair; pods tightly coiled with longitudinal seeds 65. *A. cincinnata*

Tips not golden-yellow (except *A. cowledna*); indumentum of branchlets not yellow; pods not tightly coiled 80.

80. Phyllodes yellowish, two longitudinal nerves most prominent, branchlets densely pubescent 66. *A. stipuligera*

Phyllodes usually not drying yellowish; if only two longitudinal nerves more prominent than the rest then branchlets not densely pubescent and phyllodes more than 6 cm long 81.

81. Phyllodes up to 25 cm × 5–10 cm, 2–4 times as long as wide 67. *A. mangium*

Phyllodes up to 25 cm long and up to 5 cm wide, rarely less than 4 times as long as wide 82.

82. Spikes dense up to 2·5 cm long 83.

Spikes sparse to dense, 3–10 cm long 84.

83. Branchlets, peduncles and phyllodes glutinous; phyllodes bent near the base so as to be more or less parallel to the stem 24. *A. gonoclada*

Branchlets, peduncles and phyllodes pubescent at least when young; phyllodes spreading 68. *A. cowleana*

84. Branchlets rather slender, angular, glabrous or occasionally pubescent, often with conspicuous lenticels; flowers 4–5–merous; corolla 4 times as long as the short (0·4–0·5 mm long) calyx 59. *A. maidenii*

Branchlets, if with conspicuous lenticels, then stout and angular; flowers 5–merous, calyx 0·6 mm or more long, corolla 1·4–3 times as long as the calyx 85.

85. Phyllodes with 2 prominent longitudinal nerves, up to 16 mm wide; spikes interrupted up to 8 cm long; pods flat but coiled 47. *A. solandri*

Phyllodes with usually 3 prominent longitudinal nerves or if only 2 then phyllodes more than 16 mm wide; spikes sparse to dense, 3–8 cm long; if pods flat then sometimes loosely and irregularly coiled 86.

86. Secondary longitudinal nerves rather crowded, not very anastomosing, the major ones not tending to run together in the middle of the phyllode at the base; phyllodes 15–30 mm wide, 4–8 times as long as broad. Plants of Cape York Peninsula 87.

Secondary nerves rather widely spaced anastomosing or if crowded then major ones tending to run together in middle of phyllode at the base; phyllodes 6–30 mm wide, 2·5–18 times as long as broad. One species occurring in Cape York Peninsula, but not confined to it 88.

87. Spikes dense on densely pubescent peduncles; calyx deeply lobed; corolla 1·4–1·6 times as long as the calyx; pod narrow raised over seeds and constricted between them with longitudinal seeds 69. *A. brassii*

Spikes interrupted on glabrous peduncles; calyx shortly lobed; corolla 2–3 times as long as the calyx; pod flat with undulate margins and transverse seeds 70. *A. auriculiformis*

88. Phyllodes with 2–3 major nerves longitudinal running together in the middle of the phyllode at the base, secondary nerves rather crowded; spikes sparse; pod flat 6–8 mm wide; seeds longitudinal, encircled by the funicle 71. *A. polystachya*

Phyllodes with usually 3 (sometimes only 2) major nerves concurrent with each other or with the margin at the base or free, usually not running together in the middle of the phyllode; spikes rarely sparse; pod flat or subterete, up to *ca* 4 mm wide, funicle not encircling the seed 89.

89. Branchlets pubescent, hairs either short (0·1 mm) and appressed or long (0·2–0·4 mm) and spreading 90.

Branchlets glabrous or scurfy, not pubescent 92.

90. Indumentum of branchlets short and appressed 91.

Indumentum of branchlets long and spreading 98.

91. Spikes 6–12 cm long on peduncles 6–8(–15) mm long; calyx pubescent 75a. *A. longispicata* subsp. *longispicata*

Spikes 3–4 cm long on peduncles (5–)7–13 mm long; calyx glabrous or with a few hairs at the base 73. *A. oligophleba*

92. Secondary longitudinal nerves widely spaced (less than 25/cm) 93.

Secondary nerves less widely spaced (more than 25/cm) 95.

93. Calyx 0·4–0·6 mm long; ovary glabrous 72. *A. tropica*

Calyx 0·6–1·2 mm long; ovary pubescent 94.

94. Phyllodes tending to be widest above the middle; spikes 3–4 cm long on peduncles 7–13 mm long 73. *A. oligophleba*

Phyllodes widest about the middle; spikes 4·5–7 cm long on peduncles 5–8 mm long 74. *A. leptocarpa*

95. Pulvinus short, less than 5 mm long; calyx glabrous or some flowers of the inflorescence with a few hairs at the base 96.

Pulvinus more than 5 mm long; calyx glabrous or with few or many hairs mainly at the base 97.

96. Branchlets glaucous; phyllodes abruptly contracted into pulvinus 2–3 mm long 55. *A. cretata*

Branchlets glabrous, often reddish; phyllodes tapering to pulvinus (2–)3–5 mm long 78. *A. leiocalyx*

97. Spikes dense; phyllodes 14–24 cm long, 9–20 times as long as wide; calyx glabrous or with a few basal hairs 76. *A. crassa*

Spikes only moderately dense; phyllodes 10–16 cm long, 3·5–9 times as long as wide; calyx always with some indumentum 77. *A. concurrens*

98. Phyllodes with widely spaced longitudinal secondary nerves (16–24/cm), 1·3–4 cm wide, 4–8(–12) times as long as wide; spikes dense; calyx pubescent
75b. *A. longispicata* subsp. *velutina*

Phyllodes with crowded secondary nerves (30–45/cm), 0·8–2·2 cm wide, 5·5–18 times as long as wide; spikes sparse; calyx glabrous or with a few hairs at the base
76b. *A. crassa* subsp. *longicoma*

99. Branchlets stout, very acutely angled 100.

Branchlets not particularly stout, terete or ribbed 102.

100. Phyllodes 1·5–9·5 cm broad, 2–9 times as long as broad usually pubescent; rachis glabrate; corolla at least partly pubescent 79. *A. holosericea*

Phyllodes 3–7 cm broad, 1·5–5·5 times as long as broad; rachis tomentose or sericeous; corolla glabrous 101.

101. 3–5 longitudinal nerves prominent, not running together near base of phyllode; corolla 1·4 mm long 80. *A. nesophila*

3 longitudinal nerves prominent, running together near base of phyllode; corolla 2–2·5 mm long 81. *A. grandifolia*

102. Phyllodes acute, usually with two prominent nerves, 4·5–6 cm × 9–17 mm, spikes 2–3 cm long on peduncles 1 mm long 66. *A. stipuligera*

Phyllodes obtuse, mucronulate with usually 3–4 prominent longitudinal nerves 103.

103. Trees; spikes 4 cm long; corolla glabrous 82. *A. dimidiata*

Shrubs; spikes 1·5–3 cm long; corolla with long hairs; bracteoles conspicuous before anthesis 83. *A. humifusa*

GROUP II

1. Nerves not at all reticulate, either fine and crowded with sometimes one more prominent than the rest, or nerves ± equally prominent and not crowded, or nerves obscure; often with appressed hairs, usually not with spreading hairs and not glutinous 2.

Phyllodes with 1,2,3,5, or more prominent longitudinal nerves and anastomosing secondary nerves, sometimes not conspicuous; sometimes glutinous and sometimes with spreading hairs 22.

2. Phyllodes terete, glabrous with *ca* 16 longitudinal nerves, 15–13 cm long; heads in axillary pairs 84. *A. rigens*

Phyllodes flat, rarely terete and then pubescent and usually longer 3.

3. Phyllodes stiff and pointed, less than 7 cm long with widely spaced equally prominent nerves; heads in axillary pairs 85. *A. oswaldii*

Phyllodes usually not stiff though sometimes with an innocuous brown point, either with fine crowded equally prominent nerves or with 1–3 nerves more prominent than the rest, or if more widely spaced ± equally prominent then more than 10 cm long 4.

4. Phyllodes less than 4·5 cm long, heads single in the axils 5.

Phyllodes more than 4·5 cm long, heads in reduced, rarely elongate, racemes (see also *A. granitica* which sometimes has flowers in extremely short spikes in pairs in the axils) 6.

5. Phyllodes 7–25 mm × 1·5–4 mm, curved, often sigmoid 86. *A. nuperrima*

Phyllodes 20–45 mm × 3–9 mm, straight, with an innocuous brown point
87. *A. phlebocarpa*

6. Axis of raceme 1 cm or more long; branchlets more or less glabrous; pods 1–2 cm wide 7.

Axis shorter, or if up to 12 mm long then branchlets pubescent; pods usually narrower 8.

7. Phyllodes curved, tapering to each end from the middle usually 10–23 cm × 7–20 mm; heads 15–30 flowered or more 88. *A. harpophylla*

Phyllodes straight, more or less parallel-sided, 8–17 cm × 4–8 mm, heads of *ca* 12 flowers 89. *A. argyrodendron*

8. Phyllodes more than 15 cm long, usually less than 5 mm broad; calyx more than 1 mm long 9.

Phyllodes less than 15 cm long, up to 12 mm wide; calyx less than 1 mm long or if 1 mm then phyllodes less than 12 cm long 10.

9. Phyllodes up to 4 mm wide, sometimes terete, thick, densely appressed pubescent; nerves fine and rather crowded 90. *A. coriacea*

Phyllodes to 5 mm wide, sparsely appressed pubescent, glabrescent, nerves rather distinct and widely spaced 91. *A. stenophylla*

10. Phyllodes more than 20 times as long as wide, up to 7 mm wide, pods never winged 11.

Phyllodes less than 20 times as long as wide; pods sometimes winged 16.

11. Heads small, usually less than 15 flowers per head, phyllodes up to 2 mm wide 92. *A. microcephala*

Heads larger, at least 10 flowers per head; phyllodes more than 1·5 mm wide 12

12. Heads large (30–60 flowers); phyllodes grey-green 4–7 mm wide; seeds possibly transverse, not seen when mature 93. *A. maranoensis*

Heads smaller (20–30 flowers); phyllodes silvery grey, 1·5–5 mm wide; seeds longitudinal 13.

13. Rounded shrubs or small gnarled trees (western part of Warrego and in Gregory South district), young shoots bright green, contrasting with grey-green of older phyllodes; phyllodes 7–11 cm × 2–5 mm; calyx 0·8–1 mm long 94. *A. calcicola*

Small trees often with rounded silvery crowns but young growth not markedly contrasting (from Warrego District eastward and northward); calyx to *ca* 0·9 mm long, but if more than 0·8 mm long then phyllodes more than 11 cm long 14.

14. Trees forming dense stands (associated with scarps of weathered rock in Maranoa and Warrego districts); phyllodes sometimes slightly hooked; pods 2–3 mm wide, seeds 2·5–4 mm long 95. *A. microsperma*

Trees not forming dense stands on scarps; pods and seeds larger 15.

15. Calyx shortly lobed, corolla somewhat pubescent; pods with dense appressed hairs, appearing silvery, little contracted between the seeds. Widely spread on calcareous clay soils, sometimes forming dense stands 96. *A. cana*

Calyx deeply lobed; corolla glabrous; pods with sparse appressed hairs becoming glabrous, not silvery. Restricted to small area near Thargomindah on sandy soil 97. *A. ammophila*

16. Phyllodes densely appressed pubescent when young, sparsely to moderately pubescent when old 17.

Phyllodes at most sparsely pubescent though often with greyish bloom 18.

17. Phyllodes 4–8 mm wide, 15–20 flowers per head; pod (including distinct wing) 8–18 mm wide with transverse seeds. Open tree with pendulous branches 98. *A. pendula*

Phyllodes 2·5–5 mm wide; 25–30 flowers per head; pod not winged, 5–6 mm wide with longitudinal seeds. Rounded tree, branches not pendulous 96. *A. cana*

18. Phyllodes usually covered with greyish bloom; trees often forming pure stands (sometimes thousands of hectares in area); heads of up to 25 flowers 19.

Phyllodes not covered with greyish bloom, usually somewhat yellowish, trees sometimes in groves but not forming extensive pure stands 20.

19. Pods more or less straight 9–12 mm wide with longitudinal seeds; calyx 0·5–0·6 mm long: corolla with a few hairs on the back 99. *A. cambagei*

Pods twisted and somewhat coiled 15–25 mm wide with transverse seeds; calyx 0·7–0·9 mm long; corolla moderately to densely pubescent 100. *A. georginae*

20. Phyllodes 11–15 cm × 4–7 mm; heads of 30–60 flowers 93. *A. maranoensis*

Phyllodes 5–8 cm long, if 4–7 mm wide then heads with less than 30 flowers 21.

21. Phyllodes 5–7 mm wide; up to 30 flowers per head; pods 3–4 mm broad with longitudinal seeds 101. *A. omalophylla*

Phyllodes 7–12 mm wide; 30–50 flowers per head; pods *ca* 10 mm broad with transverse seeds 102. *A. melvillei*

22. Branchlets and phyllodes glutinous, phyllodes short (often less than 5 cm long), narrow (often less than 10 mm wide), often less than 7 times as long as wide 23.

Branchlets and phyllodes not glutinous 28.

23. Phyllodes with 2 prominent longitudinal nerves and more or less translucent reticulate nerves between them, 2–4 cm × 2·5–5·5 mm heads in pairs in the axils 103. *A. montana*

Phyllodes with at least 3 longitudinal nerves prominent or if only 2 then anastomosing nerves raised and very conspicuous 24.

24. Phyllodes 2–3 cm × 3–7 mm; heads in short axillary 2–3 branched racemes, sometimes elongating into leafy shoots 104. *A. ixiophylla*

Phyllodes longer, or if shorter, then more than 7 mm wide, heads single or in pairs in the axils 25.

25. Phyllodes 1·5–2·5 cm long, 1·5–2·5 times as long as wide 105. *A. monticola*

Phyllodes 3–8 cm long, 3–30 times as long as wide 26.

26. Phyllodes 5–8 cm × 1–2·5 mm, 5–7 longitudinal nerves, anastomoses less conspicuous 106. *A. viscidula*

Phyllodes 3–7 cm × 7–18 mm, with 2–3 prominent longitudinal nerves and conspicuous anastomosing secondary nerves 27.

27. Phyllodes 4–7 cm × (6–) 9–11 mm; corolla 2·3–2·6 mm long 107. *A. dictyophleba*

Phyllodes 3–4·5 cm long, up to 12 mm wide; corolla up to 2 mm long 108. *A. melleodora*

28. Phyllodes 3·5 (sometimes 6) cm long with *ca* 10 parallel nerves, few anastomoses; heads of 4–6 flowers on peduncles *ca* 1 mm long in short axillary racemes 109. *A. dawsonii*

Phyllodes usually longer or with more definitely anastomosing nerves; inflorescences different—heads with more flowers 29.

29. Phyllodes 1–1·5 times as long as wide, with long spreading hairs or rarely glabrous, with 3–4 longitudinal nerves and coarse reticulum between them, 3–5 cm long; heads in terminal racemes due to reduction of phyllodes at end of branches 110. *A. retivenia*

Phyllodes more than 1·5 times as long as wide, not often as coarsely reticulate; inflorescence usually not a terminal raceme of heads 30.

30. Heads in pairs or in reduced racemes in the axils, the axis less than 1 cm long; phyllodes either glabrous with 3–6 or more conspicuously widely spaced nerves with few secondary nerves, or with scattered hairs at least at the base when young and 3 longitudinal nerves and 6–12 hardly less prominent secondary nerves 31.

Heads in axillary or terminal racemes or terminal panicles, the axis more than 3 cm long, or if shorter then branchlets, young phyllodes and inflorescences covered in white bloom; phyllodes with 2,3,5 or more longitudinal nerves, secondary nerves many, crowded 42.

31. Branchlets densely pubescent; phyllodes with scattered hairs at least at the base when young and with 3 prominent longitudinal nerves and 6–12 slightly less prominent secondary nerves 32.

Branchlets glabrous; phyllodes glabrous with 3–6 or more conspicuous widely spaced nerves with few (only 1–2/mm in one species) secondary nerves between them 33.

32. Phyllodes 6–9 times as long as wide; flowers yellow, the stamens up to 4 mm long 111. *A. venulosa*

Phyllodes 10–15 times as long as wide; flowers pale, stamens 6–7 mm long 112. *A. baeuerlenii*

33. Phyllodes up to 7 mm wide 34.
Phyllodes more than 7 mm wide 36.

34. Phyllodes 4–5 cm long, 9–12 times as long as broad 118b. *A. excelsa* subsp. *angusta*
Phyllodes 5·5–12 cm long, 13–35 times as long as broad 35.

35. Phyllodes broadest about the middle tapering equally to each end, acute, sometimes apiculate; peduncles 5–8 mm long; pod 4–5(–7) mm wide 113. *A. simsii*
Phyllodes broadest above the middle tapering to the base, acuminate; peduncles 3–4 mm long; pod 8 mm wide 114. *A. ramiflora*

36. Phyllodes 2–4·5 times as long as wide; branchlets sometimes flattened 37.
Phyllodes 4–15 times as long as wide; branchlets not flattened 38.

37. Branchlets flattened; phyllodes with *ca* 9 prominent longitudinal nerves 115. *A. complanata*
Branchlets slender and acutely angular but not flattened; phyllodes with 4–6 prominent longitudinal nerves 116. *A. fleckeri*

38. Phyllodes rather thick, margin ribbon-like somewhat papillose with a prominent gland at the base 117. *A. multisiliqua*
Phyllodes not markedly thick, margin not ribbon-like nor papillose 39.

39. Phyllodes 4–6·5 cm long; pod narrowly winged, coarsely reticulately nerved, contracted between the seeds and breaking up, 6–12 mm wide; funicle of seed not folded or thickened 118. *A. excelsa*
Phyllodes more than 6 cm long; pod 8–10 mm wide, occasionally slightly contracted between the seeds but not breaking up, not winged but sometimes with a prominent pale margin 40.

40. Branchlets flat; phyllodes usually with 3 prominent nerves; funicle half encircling seed 119. *A. homaloclada*
Branchlets angular, phyllodes usually with 7–10 prominent nerves; funicle sometimes folded but not encircling the seed 41.

41. Phyllodes 5–10 times as long as wide; peduncles 5–10 mm long; pods without pale margin 120. *A. hylonoma*
Phyllodes 9–14 times as long as wide; peduncles 10–25 mm long; a well defined pale margin on mature pods 121. *A. legnota*

42. Phyllodes with two prominent longitudinal nerves with finer secondary nerves forming a definite reticulum; racemes axillary, elongate 43.
Phyllodes with 3–6 prominent longitudinal nerves; racemes various sometimes terminal, sometimes reduced to groups of peduncles in the axils 44.

43. Phyllodes about 8 × 2 cm, rather thin, gland *ca* 1 mm from base with prominent rim and small orifice, sometimes linked to upper nerve by connective nerve 122. *A. binervata*
Phyllodes 11–16 cm × 2–3·5 cm, coarser, basal gland prominent, elongated, other projecting from marginal nerve (as in *A. bancroftii*) 123. *A. wardellii*

44. Whitish bloom covering branchlets, young phyllodes and inflorescences before their elongation; axis of raceme to 2 cm long; phyllodes 5–10 cm × 1–4 cm, usually 2–3·5 times as long as wide 124. *A. oraria*
White bloom not conspicuous though sometimes branchlets pruinose; axis of raceme often longer and phyllodes more elongate 45.

45. Young tips golden, stellate hairs conspicuous on branchlets and base of phyllodes; phyllodes 9–24 cm × 2–4 cm, *ca* 3 times as long as wide 125. *A. flavescens*
Tips not golden and stellate hairs either lacking or a few on bracts and at apex of racemes 46.

46. Heads of 12–15 flowers on peduncles in about 4 pairs on axis 3–6 cm long. Rainforest tree of S.E. Queensland 126. *A. bakeri*
Heads of at least 20 flowers. If trees of rainforest margins then peduncles not in pairs on axis of raceme 47.

47. Phyllodes less than 7 times as long as wide, secondary nerves forming fine reticulum, the nerve islands small and approximately square. (If few secondary nerves between widely spaced prominent longitudinal nerves, see couplet 33) 48.

Phyllodes occasionally 5 but usually more than 7 times as long as wide, either with many fine longitudinal nerves anastomosing to form nerve islands much longer than wide or secondary nerves ± transverse forming rather open reticulum 50.

48. Calyx lobes free; peduncles up to 12 mm long; pod to 1 cm wide with longitudinal seeds; funicle not folded or thickened 127. *A. hemignosta*

Calyx lobes united to above the middle; peduncles often more than 12 mm long; pods more than 1·5 cm wide with transverse seeds; funicle thickened and folded beneath seed 49.

49. Pod *ca* 2 cm wide, valves thin; seeds ± flat, 5·5–6 mm × 3–3·5 mm; a few stellate hairs at top of developing racemes and on bracts 128. *A. leptoloba*

Pod 2–3 cm wide; valves thick and woody; seeds thick 9–10 mm × 8 mm; no stellate hairs 129. *A. platycarpa*

50. Branchlets coarse, angular, glabrous; phyllodes curved, narrow oblong, 15–25 cm × 1·5–2·5 cm; pod flat, transversely reticulately nerved, 3–4 cm wide, seeds transverse 130. *A. rothii*

Branchlets rather slender, terete and glaucous or angular with sometimes a few hairs; phyllodes up to 16 cm long and 3 cm wide; pod linear, less than 7 mm broad with longitudinal seeds 51.

51. Branchlets angular, usually with some hairs; phyllodes with rather crowded secondary nerves, rather straight; funicle passing completely around the seed and folded back on itself 131. *A. melanoxylon*

Branchlets terete, glaucous; phyllodes with more widely spaced secondary nerves; prominent curved, markedly attenuate at the base; funicle once folded beneath seed 132. *A. implexa*

GROUP III

1. Corolla striate, i.e. with distinct longitudinal ribs (sometimes branched), prominent in bud 2.

Corolla not striate 4.

2. Pods with stipes more than 7 mm long; hairs on phyllodes less than 0·1 mm long or absent; phyllodes in whorls of 5–9, 2–8 mm long on fertile shoots (longer on sterile ones) 135. *A. galioides*

Pods sessile, rarely apparently on stipes up to 5 mm long; hairs on phyllodes usually at least 0·2 mm long or absent; phyllodes in whorls of 6–15, 2–15 mm long 3.

3. Phyllodes 10–15 per whorl, 6–11 mm long, strongly recurved towards the apex; branchlets glabrous or subglabrous; calyx with linear or subulate, thick, often incurved lobes 2/3 to as long as prominenty ribbed tube 136. *A. asperulacea*

Phyllodes 7–11 per whorl, 2·5–9 mm long, straight; branchlets with hairs 0·2–0·3 mm long; calyx with short broadly triangular, obtuse acuminate or laciniate lobes 0·3–0·4 mm broad at the base, the tube obscurely ribbed 137. *A. chippendalei*

4. Phyllodes slightly laterally compressed, recurved at the apex, in whorls of 6–8; stipules absent or up to 0·8 mm long 138. *A. baueri*

Phyllodes somewhat vertically flattened, in whorls of 8–27; stipules always present, at least 1 mm long 5.

5. Phyllodes 6–10 mm long, 8–12 per whorl; corolla 1·8–2·2 mm long 139. *A. spondylophylla*

Phyllodes 10–25 mm long, 12–27 per whorl; corolla 2–2·8 mm long 140. *A. longipedunculata*

GROUP IV

1. Phyllodes plurinerved, lowest nerve ± straight running into the apex, other nerves running on to the curved upper margin 2.
   Phyllodes uninerved, the nerve running to the apex 3.
2. Phyllodes 3–7 mm × 3–7 mm, about as long as wide; peduncle often as long as or longer than the phyllodes 133. *A. pravifolia*
   Phyllodes 4–11 mm × 1·6–3·2 mm, 2–4·5 times as long as wide; peduncle usually shorter than the phyllodes 134. *A. amblygona*
3. Phyllodes 3–6 mm wide, sometimes oblong, not particularly pungent; heads in axils of reduced phyllodes on short lateral branches 141. *A. hubbardiana*
   Phyllodes up to 3 mm wide base and tapering to pungent point at apex 4.
4. Flower heads with bracteoles with long points projecting beyond buds; peduncles stout; phyllodes up on 3 mm broad 142. *A. saxicola*
   Flower heads without bracteoles projecting beyond buds; peduncles slender 5.
5. Peduncles 1–2 mm long; pod 1–3 seeded; phyllodes to 1·1 mm wide 143. *A. brachycarpa*
   Peduncles 8–15 mm long; pod with more than 3 seeds 6.
6. Phyllodes 6–11 mm × 0·6–1·6 mm; calyx deeply lobed with oblong or spathulate lobes, 1·2–1·7 mm long 144. *A. ulicifolia*
   Phyllodes 4–6·5 mm × 2–2·5 mm; calyx *ca* 1 mm long, with broad sinuses and broad deltoid lobes 145. *A. gunnii*

GROUP V

1. Phyllodes quadrangular in cross-section (at least when dry), ribbed at angles and, in *A. alleniana,* on opposite faces, sometimes pungently pointed 2.
   Phyllodes terete or flat (sometimes thick), without ribs or with obscure longitudinal folds, not pungently pointed 4.
2. Phyllodes 12–20 cm long, flexuose, punctulate; flowers in groups in axils; pod linear *ca* 4 mm wide 146. *A. alleniana*
   Phyllodes up to 12 cm long but if more than 8 cm then stiff; flowers single or in pairs in the axils 3.
3. Phyllodes 8–12 cm long, stiff pungent; pods up to 4 cm wide 147. *A. peuce*
   Phyllodes (1–) 2–8 cm long, pungent, not particularly stiff; pod much narrower (see also *A. tetragonophylla* in Group VI) 148. *A. quadrilateralis*
4. Some heads in axillary racemes, some (on same plant) on axillary peduncles 5.
   Heads only on axillary peduncles 6.
5. Heads of *ca* 20 flowers; corolla 1·4–1·6 mm long 149. *A. gittinsii*
   Heads of 30–35 flowers; corolla 1·8–2·4 mm long 150. *A. ruppii*
6. Flowers small; calyx 0·6–0·8 mm long, corolla 1·4–1·6 mm long; phyllodes 1–1·4 mm wide with 1, 2, or rarely 3 obscure raised nerves, apical mucro oblique or sometimes perpendicular to the lamina 151. *A. johnsonii*
   Flowers larger; calyx 0·8–1 mm long, corolla 1·6–2 mm long; phyllodes less than 0·8 mm wide or without nerves or with 1(–2) obscure longitudinal folds and straight mucro 7.
7. Phyllodes often in groups, subterete, 2·5–10 mm long 152. *A. brunioides*
   Phyllodes scattered or occasionally in groups, flat or, if subterete, then more than 15 mm long 8.
8. Phyllodes 0·5–1·5 cm × 1–1·6 mm 153. *A. conferta*
   Phyllodes 1·5–3·5 cm × 0·3–0·8 mm 9.
9. Stipules persistent; phyllodes filiform 0·3–0·4 mm wide 154. *A. islana*
   Stipules deciduous; phyllodes 0·6–0·8 mm wide 155. *A. burbidgeae*

GROUP VI

1. Heads single on axillary peduncles; phyllodes less than 15 cm long, or if longer then less than 4 mm wide 2.

   Heads in axillary racemes, sometimes condensed so that they appear to be in axillary clusters; stipules not spinose or knob-like; sometimes heads both axillary and in racemes but then phyllodes more than 15 cm long and more than 5 mm wide 25.

2. Phyllodes with only one longitudinal nerve prominent 3.

   Phyllodes with one longitudinal nerve prominent with a well developed second (accessory) longitudinal nerve in the lower half 22.

3. Stipules spinose; phyllodes 1–2 cm long, undulate 156. *A. paradoxa*

   Stipules not spinose 4.

4. Phyllodes less than 18 mm long, always more than twice as long as wide, or if up to 4 cm long then phyllodes pungent pointed and sometimes on short lateral shoots 5.

   Phyllodes more than 18 mm long, or if shorter then less than twice as long as wide 9.

5. Phyllodes pungent pointed; peduncles 1–2 cm long. Plants of inland southern Queensland 6.

   Phyllodes not pungent; peduncles shorter (rarely to 12 mm long in one species). Subcoastal southern Queensland 7.

6. Phyllodes linear subulate crowded on to short lateral branches, more than 10 times as long as broad 157. *A. tetragonophylla*

   Phyllodes linear lanceolate, not crowded on to short lateral branches, 6–8 times as long as broad 158. *A. maitlandii*

7. Branchlets with prominent yellowish ribs sometimes broken up into bead-like particles; mid-rib markedly raised, close to the upper margin, and ± decurrent with it towards the apex; heads 4–6 flowered 159. *A. flexifolia*

   Branchlets sometimes definitely ribbed, but ribs not breaking up into bead-like particles; midribs translucent not raised; heads of more than 12 flowers 8.

8. Branchlets glabrous with resinous somewhat tuberculate ribs; phyllodes broadest at the base 5·5–11 mm × 0·8–1·6 mm; heads 20–30 flowered 160. *A. resinicostata*

   Branchlets definitely or slightly ribbed only below the insertion of the phyllodes; phyllodes broadest near the top, 6–18 mm × 1–3 mm; heads 12–15 flowered 161. *A. lineata*

9. Phyllodes uneven at the base, midrib excentric, less than twice as long as wide, a prominent gland at the base, (See also *A. leichhardtii* which occasionally has heads on axillary peduncles) 162. *A. uncinata*

   Phyllodes ± symmetrical at base, more than twice as long as wide 10.

10. Phyllodes more than 2 mm wide with an oblique mucro, sometimes on the dorsal side of it a small gland as well as a basal gland; a few small tubercles on the margins; obscurely penninerved when broad, with subparallel nerves, or with obscure longitudinal folds when narrow 11.

    Phyllodes either without apical gland though sometimes mucronate or less than 1 mm wide; tubercles on margin very large or nil 13.

11. Phyllodes 6–9 cm × 2–3 mm, 20–40 times as long as wide; calyx 1·25 mm long 163. *A. hockingsii*

    Phyllodes 2·5–5 cm long; calyx *ca* 0·7 mm long 12.

12. Phyllodes 2·5–5 mm broad, 8–14 times as long as wide 164. *A. ixodes*

    Phyllodes 1–2 mm broad, usually more than 20 times as long as wide 165. *A. gnidium*

13. Phyllodes 2–3 cm × 1·5–2·5 mm, the midrib yellowish, translucent 166. *A. lauta*

    Phyllodes longer, or if only 2–3 cm long then more than 2·5 mm broad and the midrib not translucent 14.

14. Phyllodes less than 3 cm long, up to 7 mm wide, or up to 5·5 cm long and 2 cm wide, rather coriaceous or fleshy and only indistinctly penninerved 15.

Phyllodes always more than 5 cm long, 5–20 mm wide and prominently penninerved, or narrower and sometimes apparently longitudinally folded. Flowers sometimes in axillary clusters 17.

15. Branchlets glabrous, neither hirsute nor tuberculate, phyllodes rather fleshy 3–6·5 cm × 7–18 mm; pods curved, linear up to 6 cm long 3 mm wide 167. *A. myrtifolia*

Branchlets tuberculate or hirsute; phyllodes less than 3 cm up to 7 mm wide; pod short 16.

16. Tuberculate branchlets and phyllodes; pods up to 4·5 cm × 1 cm; flowers pale, almost white 168. *A. hispidula*

Hirsute branchlets, sparse pubescence on phyllodes; pods 17 mm × 7 mm; flowers **mauve pink** 169. *A. purpureapetala*

17. Phyllodes long and narrow (always more than 30 times as long as wide) sometimes obscurely longitudinally folded, but not distinctly reticulately penninerved 18.

Phyllodes less than 30 times as long as wide, prominently penninerved 20.

18. Phyllodes 13–23 cm × 1·5–3·5 mm; heads on peduncles, single, in pairs, or in 3's occasionally peduncles branched at about the middle 170. *A. dietrichiana*

Phyllodes 7–20 cm × 0·6–1 mm; heads on peduncles, single or in pairs; peduncles not branched 19.

19. Gland 2–10 mm from the base and phyllode sometimes bent at the gland; sepals spathulate, at length free; funicle not folded 171. *A. juncifolia*

Gland basal, inconspicuous or absent; sepals united; funicle folded 172. *A. calantha*

20. Phyllodes closely conspicuously reticulately penninerved sometimes an accessory nerve in the lower half; heads in groups of 2–7 in the axils; pod linear to 7 cm × 2·5 mm 173. *A. stricta*

Phyllodes penninerved and reticulate, but coarsely so, no accessory nerve; heads either single or in clusters; pod usually at least 5 mm wide 21.

21. Heads single; phyllodes 10–15 cm × 5–8 mm; pods 9 cm × 2 cm, seeds transverse 174. *A. crombiei*

Heads in groups, racemose or single; phyllodes 5–13 cm × 7–19 mm; pods up to 12·5 cm × 1·3 cm; seeds longitudinal 175. *A. fasciculifera*

22. Phyllodes with prominent glandular dots 176. *A. verniciflua*

Phyllodes without prominent glandular dots 23.

23. Phyllodes closely and conspicuously penninerved; prominent gland near the base 173. *A. stricta*

Phyllodes not conspicuously penninerved, sometimes rather thick, becoming ± wrinkled when dry, gland at some distance from the base 24.

24. Phyllodes glaucous, not particularly thick; seeds transverse 210. *A. deuteroneura*

Phyllodes thick wrinkled; pod moniliform with longitudinal seeds 184. *A. bivenosa*

25. Racemes short (axis less than 15 mm long) or flowers apparently in clusters, never enclosed before development by imbricate scarious bracts 26.

Racemes elongate, if less than 15 mm long then enclosed before development by imbricate bracts, occasionally heads on axillary peduncles 29.

26. Phyllodes less than 3 mm wide, not penninerved 170. *A. dietrichiana*

Phyllodes more than 5 mm wide, penninerved 27.

27. Phyllodes conspicuously closely reticulately penninerved, 7·5–10·5 cm long, 9–13 times as long as wide 173. *A. stricta*

Phyllodes penninerved but not finely reticulate 28.

28. Phyllodes coarsely penninerved and reticulate 5–13 cm × 7–19 mm, 4–12 times as long as wide 175. *A. fasciculifera*

Phyllodes penninerved, the nerves prominently arched near the margin, 10–15 cm × 5–8 mm, 9–23 times as long as wide 174. *A. crombiei*

29. Phyllodes distinctly penninerved more than 1 cm wide, glabrous and often glaucous 30.

Phyllodes less than 1 cm wide, glabrous or with some indumentum, sometimes penninerved or more than 1 cm wide and pubescent at least at base 39.

30. Phyllodes 2·5–8·5 cm wide, 1·5–4·5 times as long as wide 177. *A. bancroftii*

Phyllodes narrower or more than 4·5 times as long as wide 31.

31. Phyllodes less than 9 cm long, gland basal or if some distance from the base then not with a nerve connecting it to the midrib 32.

Phyllodes more than 9 cm long, gland basal or if some distance from the base then a prominent nerve connecting it to the midrib 34.

32. Gland basal; phyllodes variable in shape and size often on same plant, linear to elliptic, acute, 4·5–16·5 cm long 185. *A. salicina*

Gland 7–30 mm from base; phyllodes not particularly variable in size and shape, usually broadest above the middle, ± obtuse, usually less than 10 cm long 33.

33. Phyllodes 5·5–10 cm long, 6–12(–15) mm wide, (5–)7–14 times as long as wide; racemes 7–10 branched with axis 2·5–3 cm long 178. *A. hakeoides*

Phyllodes 2·5–5(–6) cm long, 10–20 mm wide, 2–4·5 times as long as wide; racemes 12–24 branched with axis 3–8 cm long 192. *A. everistii*

34. Phyllodes usually broadest above the middle, attenuate at the base, often more than 2·5 cm wide; stipules inconspicuous 35.

Phyllodes not markedly attenuate at the base, or if so then margins undulate and irregular 37.

35. Prominent slit-like gland at the base 179. *A. falcata*

Gland usually prominent, at some distance (at least 5 mm, usually more) from the base, often with a connecting nerve and a distinct change in curvature at the margin 36.

36. Axis and branches of inflorescence with moderate to usually dense appressed golden pubescence; corolla 2–2·5 mm long usually pubescent 180. *A. falciformis*

Axis and branches of inflorescence glabrous or moderately appressed pubescent (not golden); corolla up to 2 mm long rarely with scattered appressed hairs 181. *A. penninervis*

37. Phyllodes with ± parallel sides, 10–25 mm wide; stipules conspicuous, reflexed and hard 182. *A. macradenia*

Phyllodes usually tapering to base and apex, 3–25 mm wide; stipules not becoming hard, inconspicuous 38.

38. Pod 10 mm wide, constricted only where seeds aborted; aril red 185. *A. salicina*

Pod to 6 mm wide, slightly constricted between seeds; aril yellow. Species naturalized on coastal sands of south-east 186. *A. saligna*

39. Phyllodes often with indumentum of spreading hairs; not more than 4 times as long as wide; flowers not large (corolla up to 2·2 mm long) 40.

Phyllodes not with the above dimensions, more elongate; flowers sometimes large (corolla 2·5–3 mm long) 44.

40. Phyllodes with complete covering of rather long (0·5 mm or more long) spreading hairs (hairs *not* appressed) 41.

Phyllodes glabrous or with short (0·1 mm long) spreading hairs on the margin at the base or with covering of short appressed hairs 43.

41. Phyllodes 12–15 cm long; stipules indurated, up to 1 cm long 187. *A. holotricha*

Phyllodes up to 5 cm long; stipules not indurated, inconspicuous 42.

42. Branchlets with dense rigid hairs *ca* 0·5 mm long; foliar gland inconspicuous 8–20 mm from the base 188. *A. podalyriifolia*

Branchlets with spreading hairs *ca* 1 mm long; gland on dorsal margin (often difficult to see because of indumentum) *ca* 1 mm from base, usually with two more distal glands 189. *A. uncifera*

43. Phyllodes 2–3·5 cm long, crowded along branchlets; lower margin straight or slightly curved upper margin sharply curved with a gland at or below broadest part of phyllode 190. *A. cultriformis*

Phyllodes 4–6 cm long, not crowded along branchlets ± symmetrical with short hairs on the margin at base or rarely glabrous; gland close to base 191. *A. jucunda*

44. Phyllodes more than 20 times as long as wide, **never** with pustular glands, or if less elongate then hairs on margins 45.

Phyllodes less than 20 times as long as wide, or if more elongate then with pustular* glands 52.

45. Racemes enclosed in bracts before development; heads with less than 10 flowers; pods 13–17 mm wide; seeds transverse 195. *A. suaveolens*

Racemes not enclosed in bracts; heads of more than 10 flowers seeds not transverse in rather wide pod 46.

46. Phyllodes 15–26 cm long; heads either in pairs in axils or in racemes 196. *A. ensifolia*

Phyllodes shorter; heads in racemes only 47.

47. Phyllodes with some indumentum, with either rather long hairs on margins or short and appressed ones on surface 48.

Phyllodes glabrous 49.

48. Hairs confined to the margin, sometimes sparse and at the base only, phyllodes 2–5 cm × 2–4·5 mm 197. *A. fimbriata*

Hairs on surface of phyllode; phyllodes 4·5–7·5 cm × 2·5–4 mm 198. *A. pubicosta*

49. Phyllodes 10–14 cm × 1·5–6 mm, wrinkled (especially when broad); flowers large, calyx 1·1–1·3 mm long, corolla 1·8–2·1 mm long 199. *A. murrayana*

Phyllodes 5–12 cm × 1–3(–4) mm, not wrinkled; flowers smaller—calyx to 1 mm and corolla to 1·7 mm 50.

50. Apex of phyllodes often hooked, 1 or 2 glands conspicuous on dorsal margin; calyx 0·9–1 mm long, golden pubescent at apex 200. *A. adunca*

Apex of phyllode not hooked; calyx 0·5–0·7 mm long, less pubescent 51.

51. Phyllodes 1–1·5 mm broad always with a well marked gland 7–15 mm from the base; heads of usually fewer than 10–12 flowers 201. *A. perangusta*

Phyllodes 2–3 mm broad, rarely narrower, with a well marked gland but this often absent; heads of 12–20 flowers 202. *A. betchei*

52. Gland pustulate; phyllodes more than 5 cm long; small trees or shrubs often retaining juvenile foliage for considerable period; e.g. up to 2 m tall 53.

Gland not pustulate; phyllodes often shorter; juvenile foliage persistent only in *A. attenuata* (with phyllodes 10–14 cm × 7–16 mm which is restricted to swampy coastal areas in northern part of Moreton and southern part of Wide Bay districts) 57.

53. Phyllodes glabrous, up to 2·5 mm wide with 1, 2 or 3 marginal glands, the lowest 2–3 mm from base 203. *A. angusta*

Phyllodes usually more than 2·5 mm wide, usually with only one gland but if more then lowest more than 10 mm from base; phyllodes glabrous or pubescent 54.

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*Pustular glands have a prominent distinct thickened rim and project from the marginal nerve of the phyllode (see Fig 7c).

54. Phyllodes with indumentum of short appressed hairs when young, persistent at base and apex and along each side of midrib rarely glabrous, more than 5 cm long, 5–12 mm wide; ovary pubescent; branchlets and phyllodes not reddish 204. **A. neriifolia*

Phyllodes glabrous or with some appressed hairs at base, less than 8 mm wide, or if wider then glabrous and with distinct reddish tinge; ovary glabrous 55.

55. Phyllodes 6–9 cm × 8–15 mm, gland (somewhat less prominent than in *A. pustula*) 10–20 mm from base; branchlets and phyllodes usually reddish (confined to Granite Belt) 205. *A. rubida*

Phyllodes less than 7 mm broad or plants not reddish 56.

56. Phyllodes 4–7 cm × 4–7 mm, rather coriaceous with 1, 2 or 3 glands, the lowest usually 10 mm or more from base. Bipinnate leaves not persistent 207. *A. semirigida*

Phyllodes 5·5–13 cm × 2–7 mm, a pustular gland 0·25–0·5 way along margin. Plant often retaining bipinnate leaves until 2–3 m tall 208. *A. pustula*

57. Phyllodes more than 7 times as long as wide or if slightly less elongate then branchlets and margins of phyllodes with long hairs and phyllodes reflexed 58.

Phyllodes less than 7 times as long as wide 67.

58. Phyllodes less than 3 cm long, often reflexed; branchlets and margins of phyllodes with long hairs 209. *A. leichhardtii*

Phyllodes more than 3 cm long, not reflexed 59.

59. Phyllodes thick, wrinkled when dry, obscurely penninerved when wide; pods rather woody 60.

Phyllodes not thick or wrinkled when dry; pods not woody 61.

60. Phyllodes extremely variable in size and shape, 4–17 cm × 3–25 mm, penninerved with undulate margins when wide; pod parallel-sided not moniliform. Widespread, in interior usually on alluvium 185. *A. salicina*

Phyllodes linear 4–10 cm × 4–7 mm; pod constricted between seeds. Restricted to interior, often on sandhills 184. *A. bivenosa*

61. Phyllodes with indumentum of moderate to dense white appressed hairs even when old; young tips golden 62.

Phyllodes glabrous when old or hairs few or confined to margin or base or rarely with spreading hairs 63.

62. Phyllodes densely appressed pubescent or with appressed hairs confined to midribs or base, acute, 2·5–4·5 mm wide, (12–)15–30 times as long as wide 198. *A. pubicosta*

Phyllodes moderately to densely appressed pubescent even when old, obtuse mucronulate, 5–10 mm wide, 7–10(–14) times as long as wide 211. *A. polifolia*

63. Phyllodes less than 7 mm wide; juvenile leaves not persistent for long periods 64.

Phyllodes more than 7 mm wide; juvenile foliage often persistent till plants more than 1 m tall 66.

64. Axis and branches of inflorescence moderately or densely appressed golden pubescent; phyllodes rather membranous, penninerved when wide with a gland 5 mm from the base and a second gland sometimes present 212. *A. decora*

Inflorescence glabrous or with spreading hairs; phyllodes rarely penninerved 65.

65. Phyllode with 1, 2 or 3 glands on margin; peduncles 3–5 mm long; calyx shortly lobed; pod up to 8 mm wide with longitudinal seeds 207. *A. semirigida*

Phyllode with only one gland; peduncles in pairs 10–14 mm long; calyx lobed ± to base; pods 12–16 mm broad with transverse seeds 183. *A. victoriae*

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*Including a variant from basalt country from Toowoomba to about Hampton which is somewhat transitional to *A. pustula*.

66. Phyllodes 5–8 times as long as wide; branchlets and phyllodes with distinct reddish tinge; pods *ca* 6 mm wide 205. *A. rubida*

Phyllodes 7–14 times as long as wide; branchlets and phyllodes not particularly reddish; pods 10–13 mm wide 206. *A. attenuata*

67. Phyllodes thick, not penninerved, wrinkled when dry, more than 6 mm wide; phyllodes glaucous or green 68.

Phyllodes not thick, penninerved when wide, not wrinkled; glaucous, sometimes less than 6 mm wide 69.

68. Corolla 2·5–3 mm long, 4–5 times as long as the calyx 167. *A. myrtifolia*

Corolla 2·6–2·7 mm long, up to 2·5 times as long as the calyx 184. *A. bivenosa*

69. Phyllodes slightly curved, tapered equally to each end; branchlets with spreading hairs 193. *A. semilunata*

Phyllodes more or less straight, often broadest above the middle; branchlets glabrous or with sparse appressed hairs 70.

70. Phyllodes less than 3 cm long 194. *A. buxifolia*

Phyllodes more than 3 cm long 212. *A. decora*

GROUP VII

1. Leaflets large, 4–20 mm long and more than 2 mm wide or if slightly less than 2 mm wide then not more than 10 pairs of leaflets per pinna 2.

Leaflets up to 7·5 mm long and less than 1·6 mm wide, or if 20 mm long then petiole winged 7.

2. Branchlets with indumentum of dense crisped hairs, leaflets 15–25 pairs per pinna, ± acute 213. *A. glaucocarpa*

Branchlets glabrous or with indumentum of spreading hairs, leaflets usually not more than 18 pairs, but up to 24 pairs per pinna, obtuse 3.

3. Axis of pinnae up to 3 cm long; petiole less than 2 cm long; usually less than 8 pairs of leaflets per pinna (up to 10), up to 11 mm long, rarely to 13 mm 4.

Axis of pinnae 3–8 cm long; petiole 1·5–5(–7·5) cm; 6–18(–24) pairs of leaflets per pinna, 9–20 mm long 5.

4. Pinnae 2–3(–4) pairs on rhachis 4–15 mm long; leaflets 4–8 mm × (1·5–)2–3 mm 214. *A. polybotrya*

Pinnae 3–5(–7) pairs on rhachis 2–7(–9·5) cm long; leaflets 6–11(–13) mm × 2·5–5 mm 215. *A. spectabilis*

5. Gland on petiole elongate with a slit-like aperture; 6–8 leaflets per pinna, 4–7 mm wide 216. *A. latisepala*

Gland on petiole ± depressed globular with a circular aperture; 8–18(–24) leaflets per pinna, 2·5–4 mm wide 6.

6. Flower heads large—calyx 1·2–1·5 mm long divided to the middle into spathulate lobes 217. *A. pruinosa*

Flower heads smaller—calyx 0·6–0·8 mm long with short obtuse lobes 218. *A. debilis*

7. Petiole with a distinct dorsal wing; usually 1, rarely 2, pairs of pinnae; leaflets 10–20 mm long 219. *A. muellerana*

Petiole without wing; more than 2 pairs of pinnae; leaflets up to 7·5 mm long 8.

8. Leaves only shortly petiolate, pinnae markedly unequal in size, the lowest shortest. Species naturalized near Stanthorpe. 220. *A. baileyana*

Leaves usually with petioles more than 2 cm long; all pinnae of about equal length 9.

9. Branchlets and usually primary axis of leaves with indumentum of long spreading hairs up to 1 mm long 10.

Branchlets glabrous or pubescent, hairs appressed and less than 0·5 mm long. 11.

10. Leaves discolorous; 9–16 pairs of pinnae each with 25–40 pairs of leaflets 3–4·5 mm × 0·5–0·8 mm 221. *A. oshanesii*

Leaves not discolorous, 3–5 pairs of pinnae each with 6–14 pairs of leaflets 4–6 mm × 0·6–0·9 mm 222. *A. chinchillaensis*

11. Leaflets 5–7·5 mm × 0·4–0·6 mm 12.

Leaflets less than 5 mm long, often more than 0·6 mm wide 13.

12. Branchlets pubescent, not strongly ribbed; 3–4 glands on axis between pinnae, none at base 223. *A. filicifolia*

Branchlets glabrous, strongly ribbed; gland on petiole as well as 1–2 between pinnae. Species naturalized in cooler parts of Darling Downs District 224. *A. decurrens*

13. Leaflets 40–60 pairs, up to 4 mm long, 0·4–0·6 mm wide 14.

Leaflets up to 40 pairs, 0·4–1·2 mm wide 15.

14. Pinnae 9–12 pairs, their axes 25–35 mm long, leaflets 2·5–4 mm long; gland between uppermost (1–)3 pairs of pinnae only 225. *A. irrorata*

Pinnae 12–18 pairs, their axes 35–45 mm long; leaflets 2–2·5 mm long; gland at base of each pair of pinnae and 2 between them 226. *A. storyi*

15. Glands on axis of leaf absent or small and inconspicuous; axis of pinna 2·5–5 cm long 227. *A. leucoclada*

Glands conspicuous; axis of pinna up to 3·5 cm long 16.

16. Pinnae 6–12 pairs; leaflets 2·4–3 mm long 228. *A. deanei*

Pinnae 11–18 pairs; leaflets 1–2 mm long 229. *A. loroloba*

GROUP VIII

1. Axis of leaves more than 10 cm long with more than 10 pairs of pinnae 2.

Axis of leaves less than 8 cm long with up to 14 pairs of pinnae; flowers always in heads 3.

2. Flowers in spikes; pinnae 15–20 pairs 230. *A. sutherlandii*

Flowers in heads; pinnae (?10–)45–50 pairs 231. *A. ditricha*

3. Spreading shrub; leaves with (1–)2–5 pairs of pinnae, gland small and inconspicuous about midway along petiole; involucre at summit of peduncle, usually hidden by the flowers; pod subterete and turgid 232. *A. farnesiana*

Tree; leaves with 4–15(–25) pairs of pinnae, gland sometimes conspicuous; involucre in middle or in lower half of peduncle; pods not subterete and turgid 4.

4. Pods narrowly and regularly constricted between the seeds, tomentellous; leaflets not discolorous. Naturalized species 233. *A. nilotica*

Pods not constricted between seeds, glabrous; leaflets somewhat discolorous 234. *A. bidwillii*

GROUP IX

Only one Australian representative 235. *A. albizioides*

subg. **HETEROPHYLLUM** Vassal

JULIFLORAE (Benth.) Maiden & Betche

Phyllodes often broad and plurinerved, occasionally narrow and uninerved or terete and striate or punctulate; phyllodes sometimes decurrent on stem. Flowers arranged in spikes on peduncles single or in pairs in axils or racemose on a short axillary axis. Type species: *Acacia julifera* Benth.

1. Acacia triptera Benth., London J. Bot. 1:325 (1842). **Type:** Barren land north of Arbuthnot Range, *Fraser* (K, holo).

A spreading intricately branched shrub or small tree to 4 m tall. Phyllodes straight or curved, diverging from the stem, pungent pointed, broadly decurrent for some distance along branchlets at the base, longitudinally striate, 2–5 cm long (from angle of stem), 2–3·5 mm wide. Spikes axillary, rather open, *ca* 1·5 cm long, rachis glabrous, peduncles 2·5–3·5 mm long. Flowers 4–, rarely 5–merous; calyx glabrous 0·6–0·7 mm long with broad obtuse lobes 0·2–0·3 mm long; corolla glabrous, lobes ± free, acute 1·7–1·8 mm long, 2·5–3 times as long as the calyx; stamens *ca* 2·5 mm long; ovary glabrous. Pods linear, slightly moniliform, faintly longitudinally nerved, with slightly thickened margins, curved or coiled, 4 cm long, 2·5 mm broad. Seeds longitudinal, *ca* 4 mm long, 1·5 mm wide.

SOUTH KENNEDY DISTRICT: Collinsville, Sep 1972, *McMurtrie* (sterile). LEICHHARDT DISTRICT: Top of range W of "Mt Playfair", 90 miles [145 km] SW of Springsure, Aug 1966, *Gittins* T59 (sterile). MARANOA DISTRICT: Roma, *Scortechini* (sterile). DARLING DOWNS DISTRICT: Miles, Sep 1959, *Everist* 6142.

Acacia triptera occurs as far north as Collinsville and Springsure and inland as far as "Mt Playfair" but it is commonest in the Miles-Chinchilla area where it forms dense thickets in eucalypt woodland on shallow, hard-setting soils. It flowers in September and the single specimen with fruit that I have seen from Queensland was collected in April.

2. Acacia chisholmii F. M. Bailey, Qd Agric. J. 4:47 (1899); Pedley, Proc. Roy. Soc. Qd 75:29 (1964). **Type:** Prairie, Torrens Creek, *Chisholm* (BRI, holo).

A. costinervis Domin, Biblioth. Bot. 89:267 (1926). **Type:** in frutice apud opp. Cloncurry, Feb 1910, *Domin* (PR, holo).

Viscid shrub to 2·5 m tall with reddish bark, the outer grey bark curling off in strips as in *A. cyperophylla* ("mineritchie"); branchlets angular, resinous with scattered appressed hairs *ca* 0·4 mm long; stipules prominent brown, reflexed *ca* 0·2 mm long. Phyllodes glabrous though with scattered appressed hairs when young, linear with a distinct point, slightly narrowed at the base, (1·5–)2·5–4 cm long, 0·7–1·6 mm wide, (12–)20–35(–45) times as long as wide, two longitudinal nerves raised and prominent, a third less prominent one on broad phyllodes; gland small and inconspicuous 3–8 mm from the base; pulvinus short. Spikes dense, 8–20 mm long, in pairs in the upper axils, on peduncles (5–)10–20 mm long, glabrous, sometimes slightly longer than the spike. Flowers 5–merous, calyx lobes 0·6–1 mm long, acute, free almost to the base, with a few scattered hairs; corolla (1·2–)1·4–1·6 mm long; 1·5–2 times as long as the calyx, divided to about the middle, glabrous; stamens 2–4 mm long; ovary with rather variable indumentum—scurfy to densely pubescent. Pod 6–12 cm long, 6–8 mm wide, flat, not particularly woody, glutinous, slightly raised over the seeds and slightly

contracted between them, transversely reticulately nerved; seeds oblique, *ca* 4·5 mm long, 3·5–4 mm wide, 1·5 mm thick, with small, ± closed areole with a pale area in the middle of the seed; funicle folded twice and expanded into a cupular aril.

BURKE DISTRICT: "Lawn Hill", May 1940, *Jensen* 84; "Riversleigh", Apr 1935, *Blake* 8701. COOK DISTRICT: Georgetown Beef road, 18°17'S 143°33'E, May 1967, *Dansie* 3883. GREGORY NORTH DISTRICT: Black Mountain, "Warenda", *ca* 50 miles [80 km] E of Boulia, Jan 1937, *Everist & Smith* 126. MITCHELL DISTRICT: "Corinda", *ca* 85 miles [135 km] N of Aramac, Jun 1949, *Everist* 3858.

In Queensland *A. chisholmii* extends from about Aramac north to Georgetown and Normanton and westward into the Northern Territory. It is particularly common in the Cloncurry-Mt Isa area in eucalypt-spinifex communities on shallow gravelly soils. Flowering specimens have been collected from May to September but the peak of flowering appears to be in June and July, and fruit in September and October.

A. chisholmii can be distinguished from *A. lysiphloia* which it closely resembles, by the raised nerves of its phyllodes. Both species have reddish outer bark that curls off in narrow strips. The flowers of *A. chisholmii* like those of *A. tenuissima* are often heavily galled by insects.

3. Acacia orthocarpa F. Muell., J. Proc. Linn. Soc. Bot. 3:136 (1859); Pedley, Proc. Roy. Soc. Qd 75:34 (1964). **Type:** Gulf of Carpentaria, *Mueller* 4 (K, iso).

A. xylocarpa A. Cunn. ex Benth., London J. Bot. 1:370 (1842) non Willd. **Type:** Dampiers Arch., Feb $\frac{119}{1818}$, *Cunningham* (K, holo; BM, iso).

A. pityoides F. Muell., J. Proc. Linn. Soc. Bot. 3:135 (1959); Pedley, Proc. Roy. Soc. Qd 75:34 (1964). **Type:** Sturts Creek, *Mueller* 5 (MEL; K, iso; lecotypus novus).

Shrub to 2 m tall; branchlets ± terete, resinous, punctulate. Phyllodes ± terete with a lateral groove or somewhat laterally compressed with a groove on each side, merging into the pulvinus, glutinous, punctulate (except on older phyllodes of one specimen), 5–10 cm long, 0·6–0·8 mm wide, 50–200 times as long as wide, not longitudinally striate. Spike 1–2(–2·5) cm long on peduncles 1·5–9 mm long in pairs in the upper axils, small vegetative bud between the spikes sometimes elongating into leafy shoots. Flowers 5–merous; calyx membranous with widely spreading ± free, somewhat irregular, lobes 0·7–0·9 mm long; corolla lobes 1–1·4 mm long, (1·2–)1·6–1·9 times as long as the calyx, glabrous, united to the middle; stamens 2–2·5 mm long; ovary glabrous, somewhat mealy. Pod thick, rather woody, tapered to the base, opening elastically from the top, up to 7·5 cm long, 3–5 mm wide, the lower 1·5–2 cm without seeds, resinous with longitudinal nerves. Seeds longitudinal or somewhat oblique *ca* 4 mm long, 1·5–2·7 mm wide, rather thick; areole large, open; funicle thick, only slightly folded, expanded into cupular aril.

BURKE DISTRICT: 20 miles [32 km] N of Mt Isa, Nov 1962, *Pedley* 1138. COOK DISTRICT: Newcastle Range, Feb 1928, *Brass* 1759. SOUTH KENNEDY DISTRICT: 11 miles [18 km] NNW of "Epping Forest", Jul 1964, *Adams* 1209.

Acacia orthocarpa has a limited and discontinuous range in Queensland. Specimens have been collected from north-west of Clermont, near Forsayth and Mt Isa, and north of Camooweal, all on shallow gravelly soils. Flowers have been collected in March and November.

If one were to take a broad view of species and consider *A. arida* Benth. (with which I would include *A. subrotata* Domin) as a single variable species then *A. orthocarpa* might be considered merely as a variant of that species. Though the flowers and pods of the two are similar, the phyllodes of *A. arida* are flat, up to 4 mm wide with a distinct midrib and two obscure longitudinal folds while those of *A. orthocarpa* are more or less terete and less than 1 mm wide.

Specimens from north-western Queensland previously identified by me as *A. arida,* should be referred to *A. hilliana* (q. v.)

4. Acacia curranii Maiden, J. & Proc. Roy. Soc. N.S.W. 49:492 (1916); Pedley, Proc. Roy. Soc. Qd 74:53 (1964); Tindale, Telopea 1:79 (1975). **Type:** Cobar, in 1887, *Curran* (MEL, holo; not seen).

Shrub to *ca* 3 m tall; inner bark reddish, the outer bark grey, curling off in narrow strips as in *A. chisholmii* and *A. cyperophylla* ("mineritchie bark"): branchlets somewhat angular, glabrous to silky pubescent. Phyllodes flattened, linear, rather flexuose, thick, depressed along the midline, glabrous or with appressed silky hairs, the indumentum sometimes restricted to the base and apex, 13–18 cm long, 1·1–1·5 mm wide, 90–150 times as long as wide; *ca* 5 longitudinal nerves conspicuous or all nerves inconspicuous; gland basal, not prominent; pulvinus short. Spikes 5–7 mm long on peduncles *ca* 1·5 mm long with an ovate obtuse silky-pubescent deciduous bract, the peduncle and rachis densely pubescent; bracteoles concave, longer than the mature buds. Flowers 5–merous; calyx 1–1·3 mm long with densely pubescent lobes *ca* 0·6 mm long, the sinuses broad and obtuse; corolla 1·5–1·8 mm long, 1·4–1·8 times as long as the calyx, with pubescent lobes; stamens 3–4 mm long; ovary densely pubescent. Pod flat with rather coarse long hairs, *ca* 6 cm long, 3 mm wide. Seeds longitudinal, *ca* 3·5 mm long, 1·2 mm wide; areole small, open, with a pale area between it and the hilum; funicle small, forming a basal aril.

DARLING DOWNS DISTRICT: 3 miles [5 km] W of Gurulmundi, Sep 1963, *Pedley* 877.

No collections of *A. curranii* have been made between Cobar, the type locality, and near Gurulmundi, north of Miles, where it forms groves on poorly drained soil overlying sandstone. It flowers in August and September.

Maiden pointed out the confusion with *A. cyperophylla.* The mixture of *A. curranii* and *A. cyperophylla* in specimens cited within the protologue of the latter is discussed under *A. cyperophylla.* The two species do look alike, but even sterile specimens can be distinguished with certainty.

5. Acacia cyperophylla F. Muell. ex Benth., Fl. Aust. 2:400 (1864). **Type:** Stony ground, Cooper's Creek, *A. C. Gregory* (MEL; lectotypus novus).

Spreading tree to 10 m tall; outer bark grey, thin, peeling off in curly narrow strips to reveal inner reddish bark; branchlets angular, slightly resinous, glabrous or with sparse minute appressed hairs. Phyllodes terete, usually tapered into a sharp point, 5–13 cm long, 1–1·5 mm thick, 35–90 times as long as thick, longitudinally nerved (*ca* 25 per phyllode), glabrous or with very short appressed hairs associated with nerves; gland basal, small. Spikes interrupted, *ca* 2 cm long on peduncles 1–3 cm long, single or in pairs in the upper axils. Flowers 5–merous; calyx densely pubescent *ca* 1·5 mm long with obtuse lobes *ca* 0·2 mm long; corolla lobes glabrous, 2–2·3 mm long, united to the middle, 1·3–1·6 times as long as the calyx; ovary glabrous. Pod flat, glabrous, obscurely longi-

tudinally nerved, without a marginal nerve, glabrous, *ca* 8·5 cm long, 7 mm wide. Seeds flat, *ca* 6·5 mm long and 4 mm wide with a small central areole; funicle slightly thickened but not folded.

GREGORY NORTH DISTRICT: "Currawilla", *ca* 100 miles [160 km] W of Windorah, Feb 1949, *Everist* 4009. GREGORY SOUTH DISTRICT: "Marama" about S of Windorah, Jul 1936, *Blake* 12023.

Acacia cyperophylla (mineritchie) is restricted to arid parts of Queensland, the southern half of Gregory North District and adjacent parts of the Gregory South District, usually along creeks in grassland and among stones on the edges of scarps. It flowers spasmodically throughout the year, probably in response to high soil moisture.

Typification of *A. cyperophylla* has presented difficulties because the protologue description applies to a mixture of *A. curranii* and *A. cyperophylla* and there seems to have been some error in the labelling of specimens. One would expect the collections cited in the protologue to be in herb. Kew. A specimen collected by Leichhardt is at Kew, but I could not locate Gregory's specimen. Unfortunately the Leichhardt specimen is *A. curranii*. It was probably collected north of Miles in November 1844. At BM there is a specimen (ex National Herbarium of Victoria) labelled "Acacia cyperophylla F. v. M./Stony Ground Cooper's Creek/Sth Australia/A. C. Gregory". This is also *A. curranii*. It is most unlikely that *A. curranii* occurs near Cooper Creek, and it is presumed that the specimen is wrongly labelled. At MEL, however, a specimen bearing a similar label is certainly *A. cyperophylla* (as described here) and it is chosen as the lectotype.

6. Acacia tennuissima F. Muell., J. Proc. Linn. Soc. Bot. 3:135 (1859); Pedley, Proc. Roy. Soc. Qd 75:33 (1964). **Type:** Sturts Creek, *Mueller* 72 (MEL, holo; K, iso).

A. xylocarpa A. Cunn. ex Benth. var (?) *tenuissima* Benth., Fl. Aust. 2:401 (1864). Based on *A. tenuissima* F. Muell.

A. luerssenii Domin, Biblioth. Bot. 89:267 (1926). **Type:** in collibus arenosis Dividing Range dictis apud opp. Jericho, Mar 1910, *Domin* (PR, holo).

Shrub to *ca* 4 m with smooth grey or brown stems; branchlets ± terete, glabrous with resinous ribs. Phyllodes thick but flat, linear, glabrous, 6·5–15 cm long, 0·7–1·1(–1·3) mm wide, 60–220 times as long as wide, striate with *ca* 8 nerves on each face, the nerves usually inconspicuous, but occasionally with raised ribs and resinous margins; gland basal, small; pulvinus very small. Spikes *ca* 1 cm long, rachis glabrous, on glutinous peduncles 5–10 mm long in pairs in the upper axils, the rudimentary shoot between them occasionally growing out into a leafy shoot and then the spikes lateral. Flowers 5–merous; calyx 0·8(–1) mm long, membranous, glabrous, ± truncate, slightly incurved at the top and splitting irregularly into lobes; corolla 1·2–1·4 mm long, 1·5–1·8 times as long as the calyx, glabrous, lobed to the middle; stamens *ca* 1·5 mm long; ovary mealy. Pod irregularly coiled, flat, somewhat constricted between the seeds and convex over them, ca 5 cm long, 3 mm wide. Seeds longitudinal, 2·5–3·5 mm long, 1·5–1·8 mm wide; areole small, open; funicle folded to form basal aril.

BURKE DISTRICT: 27 miles [59 km] E of Camooweal, May 1948, *Perry* 758; near Hughenden, top of Mt Walker, May 1936, *Blake* 11636. GREGORY NORTH DISTRICT: "Barkly Downs", 20°43'S 138°26'E, May 1947, *Blake* 17953. MITCHELL DISTRICT: Delta near Barcaldine, Feb 1936, *Everist* 1493. SOUTH KENNEDY DISTRICT: 7 Miles [11 km] NE of "Mirtna", Jul 1964, *Adams* 1139 (BRI, CANB).

Acacia tenuissima is a common shrub in eucalypt woodland on sandy soils from the Jericho–Barcaldine area northward to the Torrens Creek–Hughenden area. It is also found about Mt Isa and extends to the Northern Territory and Western Australia. The main period of flowering appears to be from March to June, and pods mature from August to October.

Flowering specimens are difficult to distinguish from *A. orthocarpa,* but the pods of the two are quite different.

7. *Acacia jackesiana Pedley. **Type:** North Kennedy District: near Argentine Mine, 60 km WSW of Townsville, Oct 1976, *E. M. & B. R. Jackes* (BRI, holo; BRI, A, CANB, K, L, MEL, MO, NSW, PR, iso).

Shrub procumbent, up to *ca* 1 m tall; branchlets glabrous, angular, reddish brown; stipules persistent linear, 1 mm long. Phyllodes glabrous linear, 12–22 cm long, from less than 1 mm to 1·6 mm wide, prominently ribbed, distinct marginal nerves and two raised ribs on each face with a faint nerve in rather a deep groove between them; gland small, basal; pulvinus less than 1 mm long. Spikes rather open, 2–2·5 cm long, the rachis glabrous, on glabrous peduncles 1–1·7 cm long in pairs in the upper axils. Flowers 5–merous; calyx glabrous *ca* 0·7 mm long, sinuately lobed; corolla rather stout, *ca* 2·2 mm long; stamens *ca* 3 mm long; ovary glabrous. Pod flat, *ca* 8 cm long, 8 mm wide; old valves only seen, similar to those of *A. whitei* with conspicuous marginal nerves.

Because of the length of the phyllodes, peduncles and spikes *Acacia jackesiana* resembles *A. cyperophylla* but the strongly raised ribs of the phyllode distinguishes it from *A. cyperophylla* and all other Queensland species. The fragments of old weathered pods that I have seen suggest that the species may have some affinity with *A. whitei,* but the rationship is not close. *A. jackesiana* is known only from the type locality.

8. Acacia guymeri Tindale, Telopea 1(5) (in press). **Type:** Cook District: 36 km WNW of Mt Carbine, Laura road, Jan 1977, *Guymer* 898 (NSW, holo).

Single or multistemmed glabrous shrub 1·5–2·5 m tall; bark smooth, silvery grey; branchlets slender, angular, soon becoming terete, somewhat resinous at the tips. Phyllodes linear, 10–15 cm long, 1·3–1·7 mm wide, 70–90 times as long as wide, thickened margins, one prominent longitudinal nerve (uninerved) and 1(–2) obscure longitudinal nerves of folds on each side of it; gland basal, inconspicuous; pulvinus 1–1·5 mm long. Spikes only 10–20 flowered, sparse when mature, to 1·5 cm long on peduncles 1–1·5 cm long subtended by basal bract

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***Acacia jackesiana** species nova, a speciebus ceteris Queenslandicis bene distincta, fortasse *A. whitei* Maiden affinis. Typus: *E. M. & B. R. Jackes* (BRI, holotypus; A, BRI, CANB, K, L, MEL, MO, NSW, PR, isotypi).

Frutex procumbens usque circa 1 m altus; ramuli glabri angulares; stipulae persistentes lineares 1 mm longae. Phyllodia glabra linearia, 12–22 cm longa, 1–1·6 mm (vel minus) lata; prominenter costata, nervis marginalibus conspicuis et utrinque costis duobus elevatis et nervo inconspicus in sulco aliquantum profundo inter eos praedita; glans parva basalis; pulvinus minus quam 1 mm longus. Spicae ± sparsiflorae, 2–2·5 cm longae rhacidi glabra in pedunculis glabris binatim in axillis superis portatae. Flores 5–meri; calyx glaber circa 0·6 mm longus sinuate lobatus; corolla aliquantum crassa circa 2·2 mm longa; stamina circa 3 mm longa; ovarium glabrum. Legumen planum circa 8 cm longum 8 mm latum; valvae veteres siccae nonnisi visae, earum *Acaciae whitei* similis, nervis marginalibus conspicuis ornatae.

ca 1 mm long. Flowers glabrous, pale yellow, 5–merous; calyx shortly lobed 0·6 mm long; corolla 2 mm long; stamens *ca* 3 mm long; ovary glabrous. Pod (immature) shortly stipitate, straight, long pointed, 6–7 cm long *ca* 5 mm wide, margins yellowish strongly thickened. Seeds probably longitudinal.

The only collection of *A. guymeri* I have seen is an excellent one from the type locality which includes flowers and immature fruits. The collector's notes and photographs indicate that it occurs in a disturbed community on a skeletal soil on a rocky hill.

The affinities if the species are not clear. It resembles *A. jackesiana,* especially in the size and shape of the phyllodes and the structure of the flowers, but differs in the venation of the phyllode and the extremely open spike.

9. Acacia tanumbirinensis Maiden in Ewart & Davies, Flora Nth Terr. 338 (1917) ("tanumbirinense"). **Type:** Northern Territory: near "Tanumbirini" Stn, Mar 1911, *Hill* 802 (NSW, holo; K, MEL, iso).

Tree to 6 m tall with hard stringy bark; branchlets slender angular, somewhat glutinous; stipules triangular, brown *ca* 0·5 mm long. Phyllodes slightly falcate, linear, glabrous, 7–18 cm long, 1·5–4 mm wide, (25–)30–80 times as long as wide, one nerve prominent, the rest crowded, not anastomosing; gland small basal; pulvinus *ca* 1 mm long. Spikes becoming rather open, 3–4 cm long, on peduncles 3–5 mm long, the rachis pubescent. Flowers 5–merous; calyx membranous 0·5–0·8 mm long divided almost to the base into narrow-oblong pubescent lobes; corolla 1–1·2 mm long, 1·5–2 times as long as the calyx, glabrous, the lobes broad and strongly recurved; stamens 2·2–2·5 mm long, ovary pubescent. Pod not known, probably similar to that of *A. plectocarpa.*

BURKE DISTRICT: 16 Mile Creek, 22 km from "Westmoreland" Stn on road to "Corinda" Stn, 17°30'S, 138°24'E, May 1976, *Simon & Farrell* 3109.

A. tanumbirinensis is restricted to an area extending from the Roper to the Nicholson River in the western part of the Gulf of Carpentaria. It occurs on sandy soils along creeks and flowers in April and May.

The species may prove only subspecifically distinct from *A. plectocarpa* which has flowers similar in size and indumentum, but broader (more than 5 mm) phyllodes. The geographical ranges of the two do not overlap. The question of the status of *A. tanumbirinensis* may be resolved when mature pods and seeds are available. *A. plectocarpa* has resinous undulate pods up to 9 cm long and 8–10 mm wide with transverse seeds with small depressed closed areoles and a conspicuous white aril.

10. Acacia aneura F. Muell. ex Benth., Linnaea 26:627 (1855). **Type:** Cudnaka, Oct 1851, *Mueller* (MEL, holo; BRI, photo).

Tree to *ca* 15 m; branchlets angular with appressed curved silvery hairs, some brown scales on young shoots, occasionally resinous. Phyllodes coriaceous, extremely variable in size and shape, varying from narrow-elliptic to linear, flat to terete when very narrow with silvery scurf and ± adpressed hyaline hairs *ca* 0·1 mm long, the surface sometimes hidden, 2–17(–24) cm long, 0·9–8(–12) mm wide, 3–90(–180) times as long as wide; many parallel non-anastomosing longitudinal nerves (up to 30 on broad phyllodes), half of them prominent, margins yellowish; gland small basal; pulvinus *ca* 1 mm long. Spikes dense, (1–)1·5–2 cm long on scurfy peduncles 3–8 mm long, rachis puberulent, single or rarely in pairs in the upper axils or more rarely apparently lateral on short

axillary shoots. Flowers 5–merous; calyx lobes ± free, spathulate, sometimes broad, (0·6–)0·7–1·1 mm long, usually with a few hairs at the top; corolla lobes free or united to the middle, glabrous, 1·2–1·8 mm long, (1·3–)1·8–2·2 times as long as the calyx; stamens 2·5–3·5 mm long; ovary usually with indumentum of close dense silvery hairs, sometimes sparse, rarely glabrate. Pods flat, glabrescent, obliquely reticulately nerved, 2·5–5 cm long, 7–13 mm wide, usually with a prominent wing 1–1·5 mm wide along the upper margin. Seeds longitudinal or slightly oblique, flat, *ca* 5 mm long and 3 mm wide, areole extremely small, open, with a pale area extending to the hilar end of the seed; funicle filiform.

BURKE DISTRICT: 6 miles [10 km] SE of "Barkly Downs", May 1948, *Perry* 743. GREGORY NORTH DISTRICT: near Boulia, Jul 1936, *Blake* 12376. MITCHELL DISTRICT: *ca* 16 miles [26 km] NW of Longreach, Jul 1963, *Everist* 7295, 7296 & 7298. GREGORY SOUTH DISTRICT: 43 miles [69 km] W of Windorah, Jul 1936, *Blake* 12109. WARREGO DISTRICT: Charleville, Apr 1936, *Blake* 11051. MARANOA DISTRICT: 12 miles [19 km] N of St George, Sep 1959, *Everist* 6112. DARLING DOWNS DISTRICT: "Woodlands", SW of Westmar, May 1959, *Pedley* 388.

Acacia aneura (mulga) is of considerable economic importance and there is a large body of literature on mulga and mulga lands. See, for example, papers in *Tropical Grasslands* vol. 7 (1973) and many of the papers cited there. It extends from Shark Bay, Western Australia to a little east of St George. In Queensland it forms dense, almost pure stands, often of considerable extent, on sandy or loamy soils, particularly in the St George-Quilpie area, with isolated stands almost as far north as Mt Isa. Flowering occurs throughout the year, possibly in response to high soil moisture, but pods appear to mature only in the period September-December.

There is an extremely wide range of variation in habit, the size and shape of the phyllodes, and the degree of winging of the pod. Because of the complexity of this variation the recognition of infraspecific taxa, such as *A. aneura* var. *latifolia,* is not at present warranted. *A. aneura* is similar to *A. brachystachya* and *A. catenulata,* both of which have pods of different types, and to *A. clivicola* which has different pods and less deeply lobed calyxes.

Cudnaka, the type locality of *A. aneura* is probably near Lake Torrens, South Australia, possibly Kanyaka near Hawker.

11. Acacia ramulosa W. V. Fitzg., J. West. Aust. Nat. Hist. Soc. 1:15 (1904). **Type:** Western Australia: Lennonville, Sep 1903, *Fitzgerald* (PERTH, holo).

Shrub to 3 m tall; branchlets angular, ribbed, glutinous with matted appressed silky hairs. Phyllodes linear, straight or slightly curved, appressed silky pubescent, mainly in the grooves between the numerous parallel longitudinal nerves (cf. *A. cyperophylla*), 11–12·5 cm long, 1·5–2 mm wide, 60–80 times as long as wide. Spikes dense 1·5–2 cm long on peduncles 7–10 mm long, single in the axils. Flowers 5–merous; calyx 0·8–1 mm long, membranous, deeply divided into obtuse oblong lobes with some hairs at the top and on the margins, always united into a tube, as little as 0·2 mm long, so that the calyx can be dissected off in one piece; corolla *ca* 1·5 mm long, lobed to the middle; ovary pubescent all over or at the top only. Pods cylindrical, 7–9 cm long, 5–8 mm wide, greyish with yellowish glutinous longitudinal nerves without prominent margins. Seeds longitudinal, 7·5 mm long, 4·5 mm wide; areole open, extremely small.

GREGORY NORTH DISTRICT: Bedourie, Jul 1936, *Blake* 12325. GREGORY SOUTH DISTRICT: *ca* 90 miles [145 km] WNW of Birdsville, Sep 1966, *Boyland* 292. WARREGO DISTRICT: "Dynevor Downs", Mar 1941, *White* 12088.

I have seen little material from Queensland that I can refer with certainty to *A. ramulosa*. It is closely related to *A. brachystachya* which always (?) has flat, though thick, phyllodes and flat pods, whereas the phyllodes of *A. ramulosa* are often terete and the pods are always terete.

12. Acacia brachystachya Benth., Fl. Aust. 2:403 (1864); Maiden, For. Fl. N.S.W. 7:9 (1917); Pedley, Trop. Grassl. 7:5 (1973). **Type:** Mutanie Ranges Mootwingle, [31°10′S 142°10′E, *ca* 110 km NE of Broken Hill], Jan 1861, Victorian Expedition. (K, holo; MEL, iso).

A. aneura F. Muell. ex Benth. var. (?) *stenocarpa* Benth., Fl. Aust. 2:403 (1864). **Type:** Yaginya Mtn [Scrope Ra., approximately 32°S 142°E, *ca* 65 km E of Broken Hill], Nov 1860, Victorian Expedition (K, holo).

A. cibaria F. Muell., Melb. Chemist & Druggist 5:26 (July 1882). **Type:** Yayinya Mountains, Nov 1860, *Beckler* (MEL; lectotypus novus).

Tree to 5 m with ascending lateral branches; branchlets angular, ribbed, with brown and silvery appressed hairs *ca* 0·15 mm long. Phyllodes coriaceous, curved linear, silvery with short appressed hairs, 8–10(–13) cm long, (1·5–)2–3 mm wide, (25–)30–50(–75) times as long as wide, with up to 16 parallel longitudinal non-anastomosing nerves; gland basal, rather prominent. Spikes rather dense, *ca* 1·5 cm long on axillary peduncles *ca* 5 mm long. Flowers 5–merous; calyx lobes shortly united at the base, broad spathulate, concave, 0·5–0·7 mm long; corolla lobes united to the middle, *ca* 1·5 mm long, 2·3–3 times as long as the calyx; stamens *ca* 2 mm long; ovary pubescent. Pod neither flat nor winged nor the margin prominent, 3–6 cm long, 3–5 mm wide, 2–2·5 mm thick, longitudinally reticulately nerved with silvery indumentum between the nerves. Seeds longitudinal, 5–7 mm long and 3–4 mm wide; areole small open, with a pale sunken area surrounding it, its funicle expanded into small clavate aril.

WARREGO DISTRICT: Quilpie, Nov 1957, *Everist* 5905; "Bowalli", *ca* 75 miles [120 km] SSW of Quilpie, May 1952, *Everist* 5035; "Mooning", *ca* 30 km S of Eulo, Nov 1954, *Smith* 6010.

Acacia brachystachya (turpentine mulga) occurs in south-western Queensland between the Warrego River and the Grey Range. It usually forms small stands on shallow gravelly soils on low rises within mulga communities. It flowers from June to about August and mature fruits have been collected from October to December.

It is a rounded shrub with stiff, more or less erect phyllodes. Unless they bear fruit, herbarium specimens are frequently confused with both *A. aneura* and *A. ramulosa*. The three species are not often confused in the field however.

I have discussed the typification of *A. cibaria* previously, but as it could affect the use of the name *A. ramulosa*, it should be considered in more detail. All three syntypes of *A. cibaria* at MEL were evidently used by Mueller in his description of the species. They are:

1. Gasgoyne River, *Oliver Jones*. The specimen consists of pod and seeds in an envelope with the note: "A great food of the natives at the Gasgoyne called the Wonuy".

2. Murchison River, *Gray*. The specimen is mounted on a sheet and is accompanied by the note: "15 to 20′ flowers Oct. and Nov. Sandy soil. Seeds eaten by natives".

3. Yayinga Mountains, 6 November 1860, *Beckler*.

The first specimen is neither *A. ramulosa* nor *A. brachystachya*. The vernacular name in the note suggests that it is *A. wanyu*. I am not familiar with that species, however, and the identity of the specimen requires further investigation. The second specimen is *A. ramulosa*. The third is *A. brachystachya*. Maiden implied that nomenclatural problems would be solved by selecting the last as lectotype and I have therefore made this choice. It is noteworthy that the holotype of *A. aneura* var. (?) *stenocarpa* and the lectotype of *A. cibaria* were both collected by *Beckler* at the same place on 6 November 1860. It is likely they are parts of a single collection.

13. Acacia granitica Maiden, J. & Proc. Roy. Soc. N.S.W. 54:230 (1921). Based on *Acacia doratoxylon* A. Cunn. var. *ovata* Maiden & Betche, Proc. Linn. Soc. N.S.W. 30:362 (1905). **Syntypes:** Howell, near Tingha, in 1904, *Maiden & Boorman* (NSW); Stanthorpe, Jul 1904, *Boorman* (BRI, K, iso).

Flat-topped spreading shrub to *ca* 1 m tall and up to 3 m in diameter or rounded to 3 m tall, branchlets slender angular, glabrous and somewhat resinous. Phyllodes ± erect, coriaceous, linear, (8–)10–22 cm long, 1·5–3·5 mm wide, (20–)35–140 times as long as wide, with 12–18 fine parallel non-anastomosing nerves, the middle one slightly more prominent than the rest; gland small or absent, ± basal, pulvinus 1–1·5 mm long. Spikes dense, 3–8 mm long on glabrous peduncles 0·5–3 mm long in pairs on a rudimentary axillary axis, the rachis pubescent. Flowers 5–merous; calyx truncate to shortly lobed with a few brown hairs at the top and long white hairs at the base, 0·5–0·8 mm long; corolla lobes 1·4–1·8 mm long, united to the middle, 2·2–3 times as long as the calyx; stamens *ca* 3 mm long; ovary hirsute. Pod linear; glabrous, flat slightly convex over seeds and sometimes slightly contracted between them, to 6 cm long, 2·5–3 mm wide. Seeds longitudinal, *ca* 3 x 1·5 mm; areole elongate, open; funicle thickened, folded 2–3 times beneath seed.

DARLING DOWNS DISTRICT: Fletcher, 8 miles [13 km] SW of Stanthorpe, Oct 1963, *Pedley* 1462. MORETON DISTRICT: Crows Nest, Oct 1921, *White*.

Acacia granitica is restricted to shallow sandy soils derived from granite in the vicinity of Crows Nest and Stanthorpe and from sandstone near Plunkett. It flowers in August and September. The distribution of *A. granitica* is similar to that of *A. ruppii*. The major occurrences of both are in elevated granite country with minor occurrences on sandstone near the coast. In Queensland *A. ruppii* is confined to granite near Stanthorpe whereas *A. granitica* extends north to Crows Nest and to coastal sandstone at Plunkett.

As Maiden suggested, its nearest relative is probably *A. caroleae* (*A. doratoxylon* var. *angustifolia*), though it bears a superficial resemblance to *A. brachystachya*.

14. Acacia caroleae Pedley, nom. et stat. nov. Based on *Acacia doratoxylon* A. Cunn. var. *angustifolia* Maiden, J. & Proc. Roy. Soc. N.S.W. 53:217 (1920). **Type:** Eidsvold, Aug 1918, *Bancroft* (NSW, holo; K, iso).

Rounded shrub or slender tree to *ca* 6 m tall; branchlets angular, glabrous, glutinous, sometimes mealy. Phyllodes linear, straight, glabrous, 5–14(–21) cm long, (1·5–)2–5(–6·5) mm wide, (10–)15–60(–90) times as long as wide,

striate with rather crowded parallel longitudinal non-anastomosing nerves, the central one prominent; gland small, basal; pulvinus *ca* 3·5 mm long. Spikes dense (interrupted on one specimen), 1–3 cm long on peduncles 1·5–4 mm long on a scurfy, rarely pubescent, axillary axis 5–20 mm long, sometimes growing out into a lateral shoot. Flowers 5–merous; calyx membranous (0·6–)0·7–1·1 mm long, the tube usually glabrous, lobes 0·2–0·3 mm long with short, blunt, brown hairs at the top; corolla lobes glabrous, united to the middle, 1·2–1·5(–1·8) mm long, 1·3–2(–2·5) times as long as the calyx; stamens 2–3 mm long; ovary slightly scurfy, rarely with some short stiff hairs at the top. Pod flat, convex over the seeds and somewhat contracted between them, *ca* 8 cm long, 2–2·5 mm wide, longitudinally wrinkled. Seeds longitudinal, 4 mm long, 1·7 mm wide; areole open, elongate, more than ¾ as long as the seed; funicle folded *ca* 4 times, forming basal aril. (Fig. 9i, inflorescence).

LEICHHARDT DISTRICT: 5 km ± E of "Mantuan Downs", 24°25′S 147°20′E, Aug 1973, *Pedley* 4114; "Bedourie", 45 miles [72 km] SW of Rolleston, Sep 1962, *Story & Yapp* 280. MARANOA DISTRICT: Clayhole Creek, 20 miles [32 km] S of Yuleba, Nov 1958, *Johnson* 650. DARLING DOWNS DISTRICT: Gurulmundi, Sep 1961, *Pedley* 880; 10 miles [16 km] S of Kogan on Tara Road, Aug 1958, *Johnson* 551; 5 miles [8 km] W of Thane, Oct 1959, *Pedley* 491.

Acacia caroleae is an attractive shrub or small tree widely distributed in inland south-eastern Queensland on sandy soil. It flowers from about mid-August to mid-October.

Acacia caroleae is more closely related to *A. burrowii* than it is to *A. doratoxylon,* which does not occur in Queensland. It has somewhat narrower phyllodes, more than 15 times as long as wide, usually longer calyxes and shorter corollas. It also lacks the broad juvenile phyllodes characteristic of *A. burrowii.*

15. Acacia adsurgens Maiden & Blakely, Proc. Roy. Soc. West. Aust. 13:28 (1928). **Syntype:** 40 miles W of Camp 4, Lander Creek, June 1911, *Hill* 360 (K, iso).

Erect shrub to 2·5 m; bark brown flaky; branchlets pale, angular, resinous. Phyllodes coriaceous, linear, glabrous, 6–17 cm long, 2–3 mm wide, 30–60 times as long as wide, with many parallel longitudinal nerves, the middle one slightly more prominent; gland basal with a large swelling but a pale orifice. Spikes dense, 1–1·5 cm long on peduncles 7–10 mm long single at the base of a rudimentary axillary shoot which sometimes grows out. Flowers 5–merous; calyx narrowly cylindric, *ca* 1 mm long, truncate or slightly incurved at the top with only a few hairs; corolla 1·5–1·7 mm long, divided to the middle; stamens *ca* 3·5 mm long; ovary slightly mealy. Pods linear, *ca* 9 cm long, 2·5–3 mm wide, raised over the seeds and slightly contracted between them. Seeds linear, *ca* 4 mm long, 1·5–2 mm wide; areole small, semicircular, central, pale (cf. *A. shirleyi*); funicle thickened with about five folds forming basal aril extending a quarter up each side of seed.

GREGORY NORTH DISTRICT: Brenda Bore, "Oban" Stn, *ca* 62 miles [100 km] SW of Mt Isa, Dec 1947, *Everist* 3372. GREGORY SOUTH DISTRICT: Windorah, Ju!–Aug 1969, *Cockburn* BPS 20. MITCHELL DISTRICT: Jericho, May 1946, *Clemens.*

Acacia adsurgens is widespread in the Northern Territory, but in Queensland it is scattered and uncommon, occurring only south-west of Mt Isa, near Windorah, and in the vicinity of Jericho, always on sandy soil.

16. Acacia lysiphloia F. Muell., J. Linn. Soc. Bot. 3:137 (1859). **Syntypes:** Sturts Creek, *Mueller* 84 (K, MEL, iso), & *Mueller* 80 (MEL); Gulf of Carpentaria, *Mueller* 3 (MEL).

Shrub to *ca* 5 m tall with reddish bark, the outer grey bark coming off in narrow curly strips as in *A. cyperophylla* (mineritichie); branchlets angular, glutinous with scattered appressed hairs largely hidden in resin; stipules persistent, brown, 1·2–2 mm long, somewhat reflexed. Phyllodes narrow, but broadest in the uppermost quarter, obtuse, mucronulate, glabrous or subglabrous, 2–3 cm long, 1·5–4(–6) mm wide, 4–10(–15) times as long as wide; two longitudinal nerves prominent, other longitudinal nerves obscure, occasionally translucent; gland not conspicuous, with a thin rim and a small orifice *ca* 3 mm from the base; pulvinus short. Spikes dense, 5–20 mm long, rachis glabrous, on glutinous, sometimes somewhat pubescent peduncles 1–2 cm long, sometimes forming a terminal raceme because of reduction of phyllodes; bracteoles exceeding the buds. Flowers 5–merous; calyx cylindrical, 0·5–0·8 mm long, membranous, divided to the middle or almost to the base, the lobes acute, pubescent or at least with some scattered hyaline hairs; corolla 1·2–1·8(–2·3) mm long, 2–3 times as long as the calyx, lobed to the middle, glabrous; stamens 4–5 mm long; ovary scurfy, sometimes with scattered long hairs. Pod flat, curved, slightly convex over the seeds, up to 7·5 cm long, 7–8 mm wide, obliquely nerved, glutinous, neither particularly woody nor opening by coiling back from the top. Seeds oblique, 4–4·5 mm long, 3 mm wide, *ca* 1·5 mm thick; areole small, closed, pale; funicle forming a cupular aril.

BURKE DISTRICT: Settlement Creek, Jun 1923, *Brass* 347; 27 miles [43 km] SSW of Mt Isa, May 1948, *Perry* 786.

In Queensland *A. lysiphloia* is found in the western part of the Burke District, on sandy soils. It flowers from May to about August.

Variants with broad phyllodes and short spikes sometimes occur. They bear a striking resemblance to *A. monticola.* Both species have a "mineritichie" bark and they may be more closely allied to each other than their placement in different sections suggests.

17. Acacia hilliana Maiden in Ewart & Davies, Fl. Nth Terr. 340 t.27 (1917). **Type:** 140 miles N of C↑4, Northern Territory, Jul 1911, *Hill* (BM, K, iso).

Misapplied name: *A. arida* auct. non Benth.; Pedley, Proc. Roy. Soc. Qd 75:34 (1964).

Flat-topped viscid shrub to 3 m tall; branchlets ± terete, glabrous, glutinous. Phyllodes coriaceous, glabrous, linear, sometimes tapering gradually to the base, obtuse mucronulate, straight or curved, 2–5 cm long, 2–3·5 mm wide, 6–20 times as long as wide, 3–5 longitudinal nerves sometimes visible, often obscure in tissue of phyllode; gland extremely small, merely a small orifice on the margin, 5–10 mm from the base; pulvinus *ca* 1 mm long. Flowers in dense spikes 1–2·5 cm long on glutinous, glabrous peduncles 1–2 cm long, single in the axils, 5–merous; calyx 0·9–1·2 mm long, divided almost to the base, the lobes membranous, widely spreading, narrowly oblong, obtuse, glabrous, the sinuses obtuse; corolla (1·2–)1·4–2 mm long, (1·2–)1·5–1·8 times as long as the calyx, divided to the middle, glabrous; stamens *ca* 4 mm long; ovary glabrous, sometimes slightly scurfy. Pod flat but thick, with prominent margins, obliquely nerved, rather glutinous, opening elastically from the top, 2–5·5 cm

long, 4–6 mm wide; seeds oblique in depressions in the woody valves, 3·5–4 mm long, 1·7–2 mm wide, rather thick with a large open pale areole; funicle straight, not folded, expanded into a cupular aril.

BURKE DISTRICT: 90 miles [145 km] from Camooweal on Burketown Road, 19°05'S 138°59'E, Jun 1966, *Pedley* 2053; 40 miles [64 km] NNW of Mt Isa, May 1948, *Perry* 765 (BRI, K).

Acacia hilliana has a range similar to that of *A. spondylophylla* extending from Hamersley Range through central Australia to Queensland. It is a common plant on gravelly soils in the Mt Isa-Camooweal area. It evidently has an extended period of flowering and fruiting. Flowers have been collected from May to September and mature pods in May, June and September.

Specimens from Queensland have broader phyllodes than specimens from the Northern Territory (including the type) have. Previously I identified the Queensland material as *A. arida.*

18. Acacia conjunctifolia F. Muell., Fragm. 11:68 (1879). **Type:** Victoria River, *Gulliver* (MEL, holo).

Shrub *ca* 1 m tall, usually spreading; branchlets prominently angled, glutinous with resinous ribs; stipules *ca* 0·5 mm long. Phyllodes single, in pairs or in 3's, linear curved with slightly oblique mucro, narrowed into a pulvinus, glutinous, glabrous, punctulate, 1·2–1·8 cm long, 1–1·7 mm wide, 8–11 times as long as wide, with three longitudinal nerves, one prominent, the others less so, translucent; gland basal, small but obvious. Spikes moderately dense 0·5–1·5 cm long on peduncles 3–7 mm long, single in the axils. Flowers 5–merous; calyx with very thin, widely spreading, glabrous lobes 0·6–0·8 mm long *ca* 0·2 mm wide; corolla rather thick, 1·2–1·5 mm long, twice as long as the calyx, lobed to the middle; stamens *ca* 3 mm long; ovary slightly scurfy. Pod flat but thick, winged on the adaxial margin, obliquely nerved, 4 cm long, 4 mm wide, widest near the top, opening elastically from the top, glabrous and glutinous. Seeds oblique in depressions in the woody valves, *ca* 5 mm long, 2·2 mm wide, *ca* 1·5 mm thick, with a large open areole; funicle filiform, abruptly expanded into a hoary, neat cupular aril.

BURKE DISTRICT: 9 miles [14 km] W of "Westmoreland", Jun 1948, *Perry* 1341.

Acacia conjunctifolia is known only from the type locality and from the extreme north-western part of Queensland where it occurs on sandy soils. It flowers from June to about September. The arrangement of the phyllodes similar to that found in *A. conferta* is unusual in section *Juliflorae.*

19. Acacia wickhamii Benth., London J. Bot. 1:377 (1842). **Type:** Swan Bay, West coast, Voyage of the "Beagle", in 1827, *Wickham* (K, holo).

A. wickhamii Benth. var. *viscidula* F. Muell., J. Proc. Linn. Soc. Bot. 3:141 (1859). **Type:** Sturts Creek, *Mueller* (K, iso).

A. calligera F. Muell., *loc. cit.* 141 (1859), *pro syn.* **Type:** Gulf of Carpentaria, *Mueller* 38 (MEL, holo; K, iso).

Resinous spreading shrub *ca* 1 m tall; branchlets, glabrous and glutinous with translucent ribs; stipules *ca* 0·6 mm long. Phyllodes glabrous, ± sessile, ovate with undulate margins or oblong-ovate, with an oblique mucro, 5–15 mm long, 4–7 mm wide, 1–2·5 times as long as wide, 1–3 prominent longitudinal nerves and other obscure ones, not reticulate, margins prominent, yellowish; gland

subbasal, extremely small. Spikes dense, 5–20 mm long on glabrous peduncles (3–)8–16 mm long in the upper axils. Flowers 5–merous; calyx 0·7–1·1 mm long, glabrous or slightly scurfy, prominently ribbed, with blunt triangular lobes up to 0·2 mm long or sometimes calyx merely undulate; corolla 1·3–1·7 mm long, glabrous or slightly scurfy, lobes with prominent midribs, 1·6–2 times as long as the calyx; stamens *ca* 3·5 mm long; ovary glabrous, sometimes minutely papillose. Pod flat, woody, broadest near the top, opening elastically by coiling back of valves from the top, prominently transversely nerved, up to 5 cm long, 6–7 mm wide. Seeds oblique, about 3 mm long and 1·5 mm wide on a rather stiff straight funicle thickened into cupular aril; areole rather large, open.

BURKE DISTRICT: 20 miles [32 km] W of Gregory Downs, Jun 1948, *Perry* 1411. COOK DISTRICT: Stannary Hills turn-off 16 km from Herberton, Sep 1960, *Smith* 11239.

Acacia wickhamii extends from the northern part of Western Australia through the central part of the Northern Territory to the north-western part of Burke district in Queensland. Plants from the eastern part of its range have decidedly broader phyllodes than those from the west. In Queensland *A. wickhamii* occurs on gravely soils in eucalypt woodland. Flowering appears to extend from March to July and flowers and well developed fruits are often found on the one plant. Most fruit mature about August.

The relationships of the species are obscure. It is rather isolated in the *Juliflorae* but it is similar, particularly in characters of the pod, to *A. nuperrima* subsp. *cassitera* in the *Plurinerves*.

20. Acacia pubifolia Pedley, Proc. Roy. Soc. Qd 74:59 (1964). **Type:** Darling Downs District: Wyberba, Oct 1958, *Pedley* 318 (BRI, holo).

Tree 8 m tall with dark fibrous bark; branchlets angular, pubescent, sometimes glaucous. Phyllodes subsessile, straight, elliptic or obovate with glandular apex, pubescent becoming puberulent, 2–10 cm long, 8–30 mm wide, 2·5–6·5 times as long as wide, many fine slightly prominent nerves, neither anastomosing nor running together; pulvinus often less than 2 mm long. Flowers 5–merous in dense subsessile axillary spikes 2–5 cm long with puberulent peduncle and rachis; bracteoles concave, longer than the calyx, pilose on the back; calyx 0·5 mm long, cylindrical, truncate or undulate, white-pubescent but the tops of the lobes with a few short brown hairs; corolla 1·6–1·8 mm long, the ovate-deltoid prominently ribbed lobes twice as long as the tube; ovary villose. Pod linear, pubescent, a little compressed, to 8 cm long and 4 mm wide. Seeds arranged longitudinally, black, rectangular, 4 mm × 2 mm; funicle twice as long as the seed, 2–3 times folded, forming small aril beneath the seed; areole indistinct, narrow and apparently closed.

DARLING DOWNS DISTRICT: Wyberba, Oct 1933, *White* 9379.

Acacia pubifolia is restricted to the Wyberba district south of Stanthorpe. It flowers in September. As mentioned in the protologue it has an affinity to *A. pycnostachya* from the New England region of New South Wales but there is also a relationship with *A. blakei* which has glabrous phyllodes, more elongate except on young plants, and usually less pubescent calyxes.

21. Acacia acradenia F. Muell., Icon. Aust. Sp. Acacia dec 11. (1888), J. Proc. Linn. Soc. Bot. 3:142 (1859), *pro. syn.* **Type:** Depot Creek, *Mueller* 6 (MEL; K, iso; lectotypus novus).

Shrub to 4 m tall with dull green foliage; branchlets angular, glutinous, ribs somewhat resinous, with indumentum of moderate to dense felty hairs. Phyllodes rather thick, elliptic to obovate, obtuse, glutinous, with moderately dense appressed hairs or glabrate, 4·5–11 cm long, 1–3 cm wide, 2·5–6 times as long as wide, with *ca* 5 longitudinal nerves prominent and many other secondary parallel nerves, not anastomosing but concurrent with lower margin near the base, not very conspicuous, nerves and margins yellowish; gland basal, a distinct swelling with a small orifice; pulvinus up to 6 mm long, pubescent. Spikes moderately dense, 2–4 cm long in pairs in the upper axils, sometimes a rudimentary shoot between them, on moderately pubescent peduncles 1–3 mm long, the rachis densely pubescent. Flowers 5–merous, calyx stout, rather broad at the base, 1–1·1 mm long with obtuse lobes *ca* 0·25 mm long, densely pubescent throughout; corolla 1·6–1·8 mm long, *ca* 1·5 times as long as the calyx, glabrous, lobed to about the middle; stamens 3–4 mm long; ovary pubescent. Pod ± terete, *ca* 7 cm long, 3·5 mm wide, curved, glutinous and with scattered hairs. Seeds longitudinal, 4 mm long, 1·5 mm wide; funicle thickened and about twice folded beneath seed; areole narrow, closed.

BURKE DISTRICT: 6 miles [10 km] S of Mt Isa, Oct 1962, *Pedley* 1117. GREGORY NORTH DISTRICT: "Tranby", 45 miles [72 km] SW of Winton, May 1936, *Blake* 11440. NORTH KENNEDY DISTRICT: Bullock Creek, near Pentland, 20°32'S 145°24'E, Aug 1970, *Correll* 107. MITCHELL DISTRICT: 8 miles [13 km] NNW of Prairie, Jun 1954, *Lazarides* 4538.

Acacia acradenia, which flowers from about March to June, occurs on stony hillsides and ranges from the Northern Territory eastward to Prairie but does not appear to be common except in the Cloncurry-Mt Isa area.

It was first described by Mueller (1859) but Bentham in editing the paper placed the name in synonymy under *A. umbellata,* and the name is therefore not validly published. The specimens cited by Mueller were referred by Bentham in Flora Australiensis to *A. umbellata* though he had some reservation about the correct placement of Mueller's flowering specimen from Depot Creek. Mueller (1888) published the name *A. acradenia* again, validating it by reference to the original 1859 description.

There appear to be only two syntypes. The Seven Emu River locality is apparently the same as the Gulf of Carpentaria one. Bentham cited it as "Seven Emu, and Robinson River" though the specimen at Kew is labelled "Gulf of Carpentaria". The specimen referred to by Bentham as "Depot Creek, *F. Mueller*" is cited by Mueller as "ad originem fluminis Victoriae".

Mueller's description (1859), plate (1888) and syntypes represent two species. The fruiting specimen, *Mueller* 10 from the Gulf of Carpentaria, is *A. umbellata.* To preserve usage current in Queensland for the last 20 years and to prevent nomenclatural complications the flowering specimen (Depot Creek, *Mueller* 6) is selected as lectotype of *A. acradenia.*

A. acradenia differs from *A. umbellata* in having usually pubescent branchlets and phyllodes, longer spikes with pubescent rachises and longer terete pods. *A. curvicarpa* from the Kimberley district of Western Australia is possibly conspecific with *A. acradenia.*

22. Acacia laccata Pedley, Proc. Roy. Soc. Qd 75:31 (1964). **Type:** Mitchell District: "Corinda" *ca* 85 miles N of Aramac, Jun 1949, *Everist* 3860 (BRI, holo).

Shrub to 3 m tall; branchlets coarse, ± terete, vernicose. Phyllodes straight, vernicose, 10–16 cm long, 2·5–5 cm wide, 3–5 times as long as wide, obtuse; longitudinal nerves crowded, not anastomosing, with about six slightly more prominent than the rest and sometimes running into the dorsal margin at the base; gland basal; pulvinus 6–7 mm long. Spikes 2–5 cm long, dense, on peduncles 1–1·5 cm long. Flowers 5–merous; calyx *ca* 1·2 mm long with short vernicose lobes; corolla glabrous 2·2 mm long; ovary villose. Pods linear, glabrous, 5–6 cm long, *ca* 7 mm wide. Seeds longitudinal, *ca* 5 mm long and 3 mm wide; funicle folded beneath seed.

BURKE DISTRICT: Settlement Creek, Nov 1934, *Brass* 375. NORTH KENNEDY DISTRICT: 47 miles [75 km] S of Charters Towers, Jun 1966, *Pedley* 2126. MITCHELL DISTRICT: 43 miles [69 km] S of Prairie, 21°28'S 144°39'E, May 1970, *Hind* 16. SOUTH KENNEDY DISTRICT: 3 miles [5 km] E of "Laglan", May 1964, *Pedley* 1717 (BRI, CANB).

Acacia laccata is fairly common on sandy soil in the western part of the Belyando basin and adjacent sandy areas to the west. It has also been found in the far north-west of Queensland, in the Northern Territory and Western Australia. It flowers about May or June.

The species does not appear to be closely related to any other. It differs markedly from *A. megalantha* to which it was compared in the protologue in having a flat linear, not markedly woody pod. *A. gonoclada,* which has smaller phyllodes without resin, appears to be its closest ally.

23. Acacia megalantha F. Muell., J. Proc. Linn. Soc. Bot. 3:143 (1859); Pedley, Proc. Roy. Soc. Qd 75:35 (1964). **Type:** Sturts Creek, *Mueller* 98 (MEL, holo; K, iso)

Medium shrub; branchlets angular, glabrous or scurfy, glutinous. Phyllodes coriaceous, elliptic with ± straight lower margin and curved upper, 6–7 cm long, 1·5–2·2 cm wide, 3–4·5 times as long as wide, 3 longitudinal nerves prominent and a number of crowded, parallel, obscure secondary nerves, neither anastomosing nor concurrent with each other at the base; gland basal, prominent; pulvinus to *ca* 3 mm long. Spikes of few (*ca* 15) flowers, up to 2·5 cm long on peduncles *ca* 1 cm long, rachis and peduncles glabrous. Flowers 5–merous; calyx stout, broad cylindric, glabrous, 1·3 mm long with obtuse lobes *ca* 0·3 mm long; corolla lobes *ca* 4 mm long, ca 1·3 mm wide, thickened at the end, united in the lower fifth, strongly recurved; stamens *ca* 5 mm long; ovary densely pubescent. Pod glabrous, woody, flat with prominent margins, *ca* 8 cm long, 8 mm wide, neither attenuate at the base nor opening elastically from the top. Seeds longitudinal or slightly oblique; funicle thickened but not folded, seen only when immature.

BURKE DISTRICT: 17 miles [27 km] from Mt Isa on Camooweal Road, May 1963, *Gittins* 750.

In Queensland *Acacia megalantha* is found in the Mt Isa area on shallow stony soil but it is not at all common. It has the largest flowers of all *Juliflorae* and does not appear to have close relatives.

24. Acacia gonclada F. Muell., J. Proc. Linn. Soc. Bot. 3:140 (1859). **Type:** Victoria River, *Mueller* (K, iso).

Misapplied name: *A. leptostachya* auct. non Benth.; Maiden, Proc. Roy. Soc. Qd 30:41 (1918).

Shrub to 4 m tall; branchlets coarse, angular, sometimes flattened with yellowish angles, scurfy or glabrous, somewhat resinous; internodes short. Phyllodes coriaceous, oblong obtuse mucronulate, curved near the base so as to lie ± parallel to the stem, (6–)9–12 cm long, (8–)12–20(–35) mm wide, (3–)4·5–7·5(–10) times as long as wide; 2 (or 3 when phyllode is broad) prominent longitudinal nerves and many parallel less conspicuous secondary slightly anastomosing nerves on narrow phyllodes ± concurrent towards ventral margin at the base, young shoots dark; gland basal, prominent, the rim raised; pulvinus 3–5 mm long. Spikes dense, 1–2 cm long, single or in pairs in the upper axils on glutinous peduncles 3–6 mm long, occasionally in terminal panicles due to the reduction of subtending phyllodes. Flowers 5–merous; calyx broad-cylindric, densely pubescent 1–1·25 mm long with obtuse lobes 0·2–0·3 mm long, often persisting at base of developing fruit; corolla stout, glabrous, 1·5–2 mm long, 1·5–1·7 times as long as the calyx; stamens 2·5–3 mm long; ovary with indumentum of dense short silvery hair. Pods flat glutinous to 4 cm long, 3–4 mm wide. Seeds longitudinal, *ca* 4 mm long, 2 mm wide with a narrow oblong open areole; funicle folded and thickened into pale aril.

BURKE DISTRICT: 10 miles [16 km] E of Donors Hill, 18°41'S 140°21'E, Jun 1966, *Pedley* 2100. COOK DISTRICT: Gilbert River, Jun 1925, *Brass* 429. SOUTH KENNEDY DISTRICT: 7 miles [11 km] NE of "Mirtna" Stn, Jul 1964, *Adams* 1140.

Acacia gonoclada commonly occurs on stony shallow soils with *Eucalyptus leucophloia* in north-western Queensland and in the Northern Territory, but in the eastern part of its range south of Charters Towers it is found on loamy or sandy soils with *E. drepanophylla* or *E. melanophloia.* It flowers from May to July and fruits about September.

A. gonoclada and *A. cowleana* are closely related. The latter is usually pubescent, but when glabrous it is difficult to distinguish from *A. gonoclada.* Its nerves are more widely spaced, its calyxes have only a few hairs at the base of the calyx and the pods are longer.

A specimen (Normanton, *Macdonnell*) was referred by Maiden to *A. leptostachya* but the affinities of *A. gonoclada* lie with *A. brevifolia* and *A. striatifolia* rather than with *A. leptostachya.*

25. Acacia curvinervia Maiden, Proc. Roy. Soc. Qd 30:34 (1918). **Type:** Beta, Jul 1913, *Boorman* (NSW, holo; K, iso).

Spreading shrub to *ca* 3 m tall; branchlets angular, scattered hairs. Phyllodes curved, elliptic, ± acute, juveniles densely pubescent and some brown scurf on young ones, 3·5–7(–10) cm long, 6–16(–23) mm wide, 2·5–5(–8) times as long as wide, 3–7 longitudinal nerves and many fine parallel nerves neither anastomosing nor concurrent with each other; gland basal, prominent, with a definite rim; pulvinus yellowish, *ca* 2 mm long. Spikes moderately dense, 2·5–3 cm long, rachis pubescent, on axillary peduncles 4–10 mm long. Flowers 5–merous; calyx membranous, pubescent with long hairs except for short brown hairs on the lobes, *ca* 0·9 mm long, lobes free almost to the base, or 0·2–0·6 mm long with broad sinuses; corolla glabrous, 1·2–1·6 mm long, 1·3–1·7 times as long as the calyx, lobed to about the middle; stamens 2·5–3·5 mm long; ovary

densely pubescent. Pod ± terete, scurfy, 5–10 cm long, *ca* 2·5 mm wide. Seeds longitudinal 3·5–4·5 mm long, 1·3–1·8 mm wide, *ca* 1 mm thick; areole ± closed, pale; funicle 2–3 times folded, forming short aril beneath seed.

NORTH KENNEDY DISTRICT: 45 miles [72 km] from Charters Towers on Clermont Road, May 1960, *Johnson* 1859. MITCHELL DISTRICT: Torrens Creek, May 1974, *Abell*; Helenvale, 25 miles [40 km] NE of Yalleroi, May 1937, *Everist* 1508. SOUTH KENNEDY DISTRICT: Mt Coolon–Collinsville Road, May 1960, *Johnson* 1810*. LEICHHARDT DISTRICT: Denham Range, Clermont–Nebo Road, Jun 1960, *Johnson* 1922*; Zamia Range, 3 miles [5 km] NNW of Springsure, Mar 1960, *Johnson* 1402.

Acacia curvinervia is common on sandy soil in the Alpha-Barcaldine area where it forms dense stands usually in woodland of *Eucalyptus similis*. There are isolated occurrences elsewhere. The usual period of flowering is May-June.

On the eastern edge of its range it intergrades with *A. julifera*. Specimens representing intermediates are indicated by an asterisk (above). The area of intergrade is small in relation to the individual ranges of the species and they should be treated as distinct.

26. ***Acacia spania** Pedley. **Type:** "Fairhill", 56 km NE of Emerald, Aug 1973, *Daniels* 6 (BRI, holo).

Tree *ca* 7 m tall; branchlets angular, scurfy; stipules small deciduous. Phyllodes slightly scurfy (when young), straight, obtuse, broadest above the middle, 2·5–4·5 cm long, 13–18 mm wide, 2–3 times as long as wide, parallel longitudinal nerves numerous crowded, 3–5 perhaps slightly more prominent than the rest; gland basal, small; pulvinus *ca* 1 mm long, strongly wrinkled. Spikes 2·5–4 cm long, dense, on short peduncles (up to *ca* 3 mm long) in upper axils. Flowers 5–merous; calyx *ca* 1 mm long divided almost to the base with obtuse lobes broadest near the top, a few hairs at base and a little brown scurf at the top, sinuses broad, obtuse; corolla *ca* 1·5 mm long, glabrous; stamens 2 mm long; ovary glabrous. Pod unknown.

Acacia spania is known only from the type locality where it is reported to occur on shallow red soil in semi-open country. Its nearest relatives appear to be *A. umbellata* and *A. striatifolia* but it has much smaller phyllodes and deeply lobed calyx. The structure of the calyx suggests a possible relationship with *A. curvinervia*. Pods are required to elucidate its affinities.

27. Acacia umbellata A. Cunn. ex Benth., London J. Bot. 1:378 (1842). **Syntypes:** Cleveland Bay, June $\frac{321}{1819}$, *Cunningham* (K, BM, iso); Cape Flinders, July $\frac{322}{1819}$, *Cunningham* (K); Australia, *Bauer* (ex herb. Mus. Vinc. 1837) (K).

Rather dense shrub *ca* 1·5 m tall; branchlets ± terete or angular, somewhat resinous; young shoots reddish. Phyllodes glabrous, elliptic, obtuse, sometimes mucronulate, straight or somewhat curved at the base so as to parallel the stem,

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***Acacia spania** species nova affinis *A. striatifoliae* Pedley et *A. umbellatae* A. Cunn. ex Benth. phyllodiis parvioribus, spicis longioribus et calycibus profunditer lobatis differt. **Typus:** *Daniels* 6 (BRI, holotypus).

Arbor circa 7 m alta; ramuli furfuracei angulares; stipulae parvae caduceae. Phyllodia leviter furfuracea ubi juvenia, recta obtusa latissima supra medium 2·5–4·5 cm longa, 13–18 mm lata, 2–3-plo longiora quam latiora, nervis crebris longitudinalibus numerosis parallelis, 3–5 quam ceteris forte leviter prominentioribus praedita; glans parva basalis; pulvinus valde rugosus circa 1 mm longus. Spicae densae 2·5–4 cm longae in pedunculis usque 3 mm longis semel in axillis supernis portatae. Flores 5–meri; calyx 1 mm longus in lobos subglabros obtusos versus apicem latissimos profunde lobatus; corolla circa 1·5 mm longa glabra; stamina 2 mm longa; ovarium glabrum. Legumen ignotum.

6–10(–14) cm long, (12–)16–30(–35) mm wide, 2–5·5(–8) times as long as broad, with 1, 2 or 3 longitudinal nerves prominent, often yellowish, and many fine parallel secondary nerves, not anastomosing, occasionally, when phyllodes are narrow, concurrent with lower margin near the base; gland basal, with somewhat protruding rim and small orifice; pulvinus 3–5(–7) mm long. Spikes dense, 1(–2) cm long on often slightly scurfy peduncles 1–2(–3·5) mm long, two or rarely three on short axillary branches up to 1 cm long, sometimes growing out into leafy shoots. Flowers 5–merous; calyx (0·7–)0·9–1 mm long, moderately or sparsely pubescent, lobes usually 0·1–0·2 mm long, obtuse, fimbriate; corolla 1·2–1·4(–1·6) mm long, glabrous, lobed to about the middle; stamens *ca* 3·5 mm long; ovary glabrous or sometimes scurfy. Pod ± terete, curved, 3–4·5 cm long, *ca* 3 mm wide, longitudinally wrinkled and with rather prominent margins. Seeds longitudinal, shining black, *ca* 3·5 mm long, *ca* 2 mm wide and 1 mm thick; areole small, open; funicle ribbon-like, folded *ca* 5 times to form basal aril.

BURKE DISTRICT: "Riversleigh", Jun 1966, *Pedley* 2065. COOK DISTRICT: 10 miles [16 km] W of Dimbulah on Petford Road, Apr 1962, *McKee* 9419. NORTH KENNEDY DISTRICT: Bowen, *Shirley*. SOUTH KENNEDY DISTRICT: "Disney" *ca* 90 miles [145 km] N of Clermont, Jul 1964, *Pedley* 1726.

Acacia umbellata is found in coastal and subcoastal districts of Queensland though it is apparently absent from Cape York Peninsula north of about Cooktown. It is found usually on stony or shallow sandy soils. Flowers are borne erratically during the wet season (summer).

A. umbellata and *A. acradenia* are closely allied and are often confused in herbaria (see *A. acradenia*). The two may be sympatric north of Mt Isa but I have not seen them growing together. *A. acradenia* is usually spindly and little-branched whereas *A. umbellata* is a low spreading densely branched shrub—hence Cunningham's epithet.

I have not selected a lectotype, but if one is chosen the *Bauer* sheet at Kew should be excluded. This is a mixture of *A. umbellata* and probably *A. julifera*.

28. *Acacia striatifolia Pedley. **Type:** Darling Downs District: 20 km NE of Chinchilla, Aug 1973, *Pedley* 4128 (BRI, holo; A, CANB, K, L, MEL, PR, iso).

Tree to 8 m tall; branchlets angular, minutely pubescent or mealy; young shoots reddish. Phyllodes glabrous straight, elliptic, obtuse mucronulate, 5–8 cm long, (13–)18–30(–40) mm wide, 2–4·5 times as long as wide; 3, rarely 5, longitudinal nerves more prominent than the rest with many fine crowded secondary nerves, not anastomosing; gland basal; pulvinus 2–5 mm long,

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***Acacia striatifolia** Pedley, species nova affinis *A. umbellata* A. Cunn ex Benth. phyllodiis brevioribus latioribus et calyce pubescentiore breviore differt. **Typus:** *Pedley* 4128 (BRI, holo; A, CANB, K, L, MEL, PR, iso).

Arbor usque 8 m alta; ramuli angulares minute pubescentes vel farinosi; surculi juvenes rubelli. Phyllodia glabra recta elliptica obtusa mucronulata, 5–8 cm longa, (13–)18–30(–40) mm lata, 2–4·5–plo longiora quam lata, 3(raro 5) nervis longitudinalibus ceteris prominentioribus et nervis secundariis tenuibus congestis non anastomantibus praedita; glans basalis; pulvinus 2–5 mm longus, interdum minute pubescens. Spicae 3–5 cm longae densae vulgo in pedunculis solitariis furfuraceis ca 2 mm longis ca 5 mm supra basin axis brevis axillaris portatae, spicae ut videtur laterales quum axis axillaris in surculum foliaceum interdum crescit. Flores 5–meri; calyx 0·6–0·8 mm longus, membranaceus lobis latis obtusis ca 0·1 mm longis interdum solummodo sinuolatis, apice aliquot pilis brunneis vel margine pilis aliquis hyalinis obsitus; corolla 1·3–1·5 mm longa 2–2·2–plo longiora quam calyx; stamina ca 3 mm longa; ovarium leviter farinosum glabrumve. Legumen maturum non visum.

occasionally minutely pubescent. Spikes 3–5 cm long, dense usually on single, scurfy peduncles *ca* 2 mm long about 5 mm along a short axillary axis which sometimes elongates into a leafy shoot, then the spike appears to be lateral. Flowers 5–merous; calyx 0·6–0·8 mm long, membranous with broad obtuse lobes *ca* 0·1 mm long and sometimes merely sinuolate, a few brown hairs at the apex or some hyaline hairs on the margin; corolla 1·3–1·5 mm long, 2–2·2 times as long as the calyx; stamens *ca* 3 mm long; ovary slightly farinose or glabrous. (Fig. 8b, phyllode.)

DARLING DOWNS DISTRICT: 45 km (28 miles) N of Chinchilla on Auburn road, Aug 1975, *Coveny* 6821 & *Hind* (BRI, NSW).

A. striatifolia occurs in State forests north of Chinchilla. It usually forms dense stands on roadsides or in eucalypt woodland (*Eucalyptus maculata, E. nubila, E. bloxsomei,* etc.) on shallow gravelly soils. It flowers in August and September. Herbarium specimens suggest a relationship to *A. umbellata,* but the structure of the inflorescence and the facies of the plant in the field indicate that *A. blakei* is a near relative.

29. *Acacia tenuinervis Pedley. **Type:** Glenmorgan, Sep 1961, *Pedley* 862 (BRI 220861, holo; BRI 030325, A, CANB, K, L, MEL, PR, iso).

Tree to 9 m tall, often developing root suckers; branchlets slender angular, soon becoming terete, orange-red, glaucous, particularly in axils, young shoots reddish, drying black. Young plants with velutinous branchlets and ± straight tomentose phyllodes, *ca* 7–9 cm long, *ca* 2 cm wide. Phyllodes straight, the lower margin straight, the upper curved, glabrous or slightly scurfy, 9–12·5 cm long, 2–3 cm wide, 3·5–6 times as long as wide; 3 or sometimes 5 longitudinal nerves more prominent than the rest, secondary nerves fine, crowded, not anastomosing; gland basal, rather large; pulvinus 3–6 mm long. Spikes dense 3–5 cm long, on puberulent peduncles 4–5 mm long, 1–2(–5) along axis of axillary shoot (5–)10–25 mm long, the axis sometimes elongating into leafy shoot and then spikes lateral. Flowers (4–)5–merous; calyx 0·7–0·8 mm long glabrous or with a few long hyaline hairs towards the base, sinuolate or truncate; corolla 1·3–1·5 mm long, 1·6–2 times as long as the calyx; stamens *ca* 2·5 mm long; ovary glabrous. Pods straight, scurfy, raised over the seeds *ca* 2·5 cm long, 2·3–2·5 mm wide; areole narrow, elongate, open; funicle 2–3 times folded into basal aril.

BURNETT DISTRICT: "Impey" Pastoral Holding, *ca* 40 miles [64 km] NE of Wandoan, Jun 1959, *Johnson* 792; near Boondooma 70 km S of Mundubbera, 26°16′S 151°17′E, Sep 1969, *Pedley* 2890. DARLING DOWNS DISTRICT: Glenmorgan, 27°15′S 149°41′E, in 1968, *Gordon* 4065, Sep 1961, *Pedley* 862.

***Acacia tenuinervis** Pedley, species nova affinis *A. striatifolia* Pedley plantis juvenibus pubescentibus et spicis in surculis axillaribus longis lateraliter dispositis differt. **Typus:** *Pedley* 862 (BRI 220861 holo; BRI 030325, A, CANB, K, L, MEL, PR, iso).

Arbor usque 9 m altus, saepe surculos radicibus emittens; ramuli tenues angulares mox teretes, rubiginosi glauci praesertim in axillis; surculi juvenes rubelli, siccitate atri. Phyllodia recta margine infera recta supera curvata glabra vel leviter furfuracea, 9–12·5 cm longa, 2–3 cm lata, 3·5–6–plo longiora quam lata, 3(interdum 5) nervis longitudinalibus ceteris prominentioribus et nervis secundariis tenuibus aggregatis non anastomantibus praedita; glans basalis aliquantum magna; pulvinus 3–6 mm longus. Plantae juvenes ramulis velutinis et phyllodiis ± rectis tomentosis, ca 7–9 cm longis, ca 2 cm latis instructae. Spicae densae 3–5 cm longae in pedunculis puberulis 4–5 mm longis secus axem surculi axillares (5–)10–25 mm longam dispositae, interdum axe in surculum foliaceum elongata et tum spicae laterales. Flores (4–)5–meri; calyx 0·7–0·8 mm longus glaber vel versus basem aliquot pilis longis hyalinis sinuolatus truncatusue; corolla 1·3–1·5 mm longa, 1·6–2–plo longiora quam calyx; stamina ca 2·5 mm longa; ovarium glabrum. Legumina recta furfuracea, elevata super semina ca 2·5 cm longa, ca 2·5 mm lata; areola tenuis elongata aperta; funiculus 2–3–plo plicatus basilem arillem faciens.

A. tenuinervis is known only from the three localities noted above. It flowers in September. It is closely related to both *A. blakei* and *A. striatifolia,* but is sufficiently distinct from each to warrant recognition as a species. Unlike those of *A. blakei* the branchlets and phyllodes of young plants are densely pubescent, it has more elongate broader phyllodes and shorter pods. It differs from *A. striatifolia* in young plants being pubescent and having rather long axillary shoots with lateral spikes.

30. Acacia pubirhachis Pedley, Contrib. Qd Herb. 15:15 (1974). **Type:** Cook District: "Starke" *ca* 45 miles NNW of Cooktown, Nov 1965, *Pedley* 1909 (BRI, holo).

A small branched tree up to 7 m tall; branchlets rather angled, pubescent; stipules ovate, acute, scarious, deciduous. Phyllodes straight or slightly falcate, with a covering of long white hairs when young, afterwards subglabrous, 10–12 cm long, 5–8 mm wide, 12–25 times as long as wide; 1 or 2 conspicuous longitudinal nerves, crowded parallel secondary nerves, neither anastomosing nor running into each other or into the margin at the base; gland basal; pulvinus pubescent glabrescent *ca* 2 mm long. Spikes moderately dense, up to 6 cm long, subsessile, in pairs in the upper axils, with densely pubescent rachises and concave acute bracteoles. Flowers 5–merous; calyx 0·7 mm long with pilose obtuse lobes 0·2 mm long and broad sinuses; lobes of the glabrous corolla obtuse 1·6 mm long with a conspicuous rib, united to the middle; stamens *ca* 2 mm long; ovary with a covering of hairs 0·2 mm long. Pod glabrous, 5–7 cm long, *ca* 1 cm broad, the valves thin; seeds transversely arranged, 5 mm long, 2 mm broad, with the funicle folded 4 times into a basal aril.

COOK DISTRICT: Hopevale Mission, 15°14′S 145°07′E, Sep 1970, *Gittins* 2181. NORTH KENNEDY DISTRICT: mouth of Tully River, Nov 1965, *Webb & Tracey* 8152.

Acacia pubirhachis is confined to coastal districts from about Tully to north of Cooktown. It often occurs on poorly drained sands with heath. It flowers in August and September, and mature fruit have been collected in November. *A. pubirhachis* is closely allied to *A. delibrata* which however has a peculiarly winged pod and longitudinal seeds.

31. Acacia leptostachya Benth., Fl. Aust. 2:406 (1864); Pedley, Proc. Roy. Soc. Qd 74:55 (1964). **Syntypes:** Newcastle Range, *Mueller* (K); Port Denison, *Dallachy* (K; MEL, iso); Port Denison, *Fitzalan* (K; MEL, NSW, iso); Broadsound, *Bowman, herb Mueller* (MEL, iso).

A. argentea Maiden, Proc. Roy. Soc. Qd 30:41 (1918). **Type:** Alma-den, Aug 1913, *Cambage* 3893 (BRI, iso).

A. capillosa Pedley, Proc. Roy. Soc. Qd 75:29 (1964). **Type:** Cook District: Upper Emu Creek, S. of Irvinebank, Jun 1962, *Whitehouse* (BRI, holo).

Misapplied name: *A conspersa* auct. non F. Muell.; Domin, Biblioth. Bot. 89:268 (1926).

Shrub or rounded tree to 5 m tall; branchlets angular with translucent ribs, appressed pubescent except on ribs. Foliage and branchlets of young plants hirsute. Phyllodes coriaceous, straight or curved, lower margin ± straight, curved, broadest above the middle, subglabrous or pubescent with silvery appressed hairs (3·5–)4·5–8·5(–12) cm long, 3–11(–15) mm wide, 6–20(–25) times as long as wide, numerous rather close parallel nerves not anastomosing, 2–3 more prominent than the rest, yellowish, the minor ones translucent, the major ones

tending to run into the lower margin at the base; gland basal, inconspicuous; pulvinus *ca* 1 mm long. Spikes moderately dense 2–4 cm long with glaucous rachis on peduncles 1–2(–4) mm long in pairs on rudimentary axillary axis (in one case axis with 7 spikes). Flowers 5–merous; calyx membranous, (0·4–) 0·6–0·8 mm long with obtuse lobes 0·1–0·2 mm long, varying greatly in indumentum, from uniformly golden pubescent to subglabrous with ciliate lobes; corolla deeply lobed, 1·2–1·7 mm long, glabrous or with a few short hairs at the apex, 2–3 times as long as the calyx; stamens 2–3·5 mm long; ovary densely pubescent. Pod varying from: flat, convex over the seeds, glabrous, 6 cm long, 3 mm wide, with longitudinal seeds 2·7 mm long, 1·5 mm wide with large, open areole and funicle folded 2–3 times beneath seeds; to flat, raised over seeds, glaucous 4 cm long, 9 mm wide with transverse seeds *ca* 4 mm long and 2 mm wide with large open, elongate areole and funicle folded *ca* 4 times.

BURKE DISTRICT: 10 miles [16 km] SE of Croydon, Jul 1954, *Lazarides* 4696. COOK DISTRICT: 29 miles [45 km] S of "Forest Home", Jul 1953, *Lazarides* 3890. NORTH KENNEDY DISTRICT: 11 miles [18 km] NE of "Wyandotte", Jul 1953, *Perry & Lazarides* 3752. MITCHELL DISTRICT: 20 miles [32 km] E of Barcaldine, Sep 1956, *Burbidge* 5532; "Helenvale" *ca* 10 miles [16 km] ESE of Jericho, Oct 1940, *Smith & Everist* 963. SOUTH KENNEDY DISTRICT: 2·5 miles [4 km] E of Mt Coolon, Jul 1964, *Adams* 1108. LEICHHARDT DISTRICT: Planet Creek, *ca* 30 miles [48 km] NE of Rolleston, Sep 1962, *Story & Yapp* 308; Isla Gorge, Sep 1968, *Everist* 8027. PORT CURTIS DISTRICT: Canoona, Sep 1943, *Blake* 15321; Gladstone, Jan 1920, *White*. WARREGO DISTRICT: Glenbar ridge, 50 miles [80 km] SE of Charleville on "Boatman" Road, Aug 1969, *Silcock*. MARANOA DISTRICT: "Boatman", Oct 1957, *Everist* 5624. BURNETT DISTRICT: Eidsvold, *Bancroft*.

Acacia leptostachya ranges from the southern part of Cape York Peninsula through coastal and subcoastal districts as far as the southern part of the Fitzroy River basin with isolated occurrences south-east and north-east of Charleville. It is particularly common on sandy soils in a large area extending from Pentland and Torrens Creek south to Lochnagar and Jericho. As well as on relatively deep sands it is also found on skeletal soils on sandstone; for example, on the Blackdown Tableland and Isla Gorge. In the northern part of its range *A. leptostachya* flowers in June and July, but in the south August and September appear to be the main months of flowering.

A. leptostachya is a variable species which like *A. aneura* is difficult to subdivide in a logical or useful way. The variation is marked in:

(a) Habit—from subshrub *ca* 0·5 m tall to small tree *ca* 5 m tall.
(b) Dimensions of phyllodes. The distribution of frequency of widths is bimodal with peaks at 3–4 mm and 9–10 mm.
(c) Indumentum of calyx—from glabrous to densely pubescent.
(d) Breadth of pod and arrangement of seeds—from 3 mm wide with longitudinal seeds to 9 mm wide and transverse seeds.

In general pods of species of *Acacia* do not show a great range of variation. The variation in what is considered a single species is therefore unexpected. Unfortunately less than a tenth of the specimens examined bear pods so that pattern of variation in the pod cannot be critically examined.

A. capillosa is conspecific with *A. leptostachya*. It was thought to differ in having hirsute branchlets and phyllodes, but examination of extensive stands of *A. leptostachya* west of Jericho and north-east of Charleville, both considerably removed from the type locality of *A. capillosa*, revealed that young plants of *A. leptostachya* are generally hirsute and that the hairs sometimes persist until the plants flower. There is therefore no basis for considering the two as distinct species. Domin identified a pubescent specimen as *A. conspersa*, a species confined to the Northern Territory.

32. Acacia catenulata C.T. White, Proc. Roy. Soc. Qd 55:63 (1944). **Type:** between Mitchell and Morven, Sep 1941, *White* 12092 (BRI, holo; MEL, iso).

Tree to 15 m tall; trunk deeply fluted; usually with many short ± horizontal branches; branchlets angular, scurfy with scattered curved hyaline hairs *ca* 0·1 mm long; young shoots dark. Phyllodes coriaceous, straight or curved ± acute, glabrous or with scattered silvery hairs, 3·5–8·5(–9·5) cm long, (2–)3–7(–12) mm wide, (3·5–)6–22(–26) times as long as wide, with up to *ca* 30 parallel nerves, not anastomosing, 1 sometimes more prominent than the rest, on the whole nerves more prominent and closer than *A. aneura;* gland basal, prominent swelling and small orifice; pulvinus short, yellowish. Spikes dense, 1–3 cm long, on slightly appressed pubescent peduncles 2–4 mm long, single or in pairs in upper axils or occasionally laterally placed on short axillary shoot. Flowers 5–merous, rarely 4–merous; calyx lobes free, spathulate, obtuse, with a few hairs at the top, 0·4–0·6 mm long; corolla lobes free, slightly papillose on the margins, rarely a few hairs at the top, 1–1·2 mm long, 1·7–2·4 times as long as the calyx; stamens *ca* 2·5 mm long; ovary densely pubescent with long hairs. Pod flat, thin, somewhat longitudinally wrinkled, contracted between the seeds, up to 8 cm long, 4–5·5 mm wide, 1·5 mm at narrowest part. Seeds longitudinal.

MITCHELL DISTRICT: Lorne Peak *ca* 50 miles [80 km] SSW of Blackall, Aug 1939, *Everist* 1872. SOUTH KENNEDY DISTRICT: 7·5 miles [12 km] SE of "St Anns", 21°15'S 146°55'E, Jul 1964, *Adams* 1113. LEICHHARDT DISTRICT: 8·5 miles [13 km] E of Emerald, Sep 1962, *Story & Yapp* 257. WARREGO DISTRICT: Grey Range, 40 miles [64 km] WNW of Thargomindah, Sep 1967, *Pedley* 2480; Morven, Mar 1936, *Blake* 10918. MARANOA DISTRICT: 20 miles [32 km] W of Mitchell, Mar 1936, *Blake* 10936. DARLING DOWNS DISTRICT: 12 miles [19 km] W of Glenmorgan, Jan 1963, *Pedley* 1204.

Acacia catenulata (bendee) forms pure stands on shallow soils derived from deeply weathered sandstone from a little east of Surat to the Grey Range extending to the Belyando River basin. In the Grey Range *A. catenulata* is found about the middle of a catenary sequence on deeply weathered sediments but to the east and north it appears to form the uppermost component. In the northern part of its range stands of *A. catenulata* and *A. shirleyi* (lancewood) sometimes adjoin but do not mix.

A. catenulata probably behaves similarly to *A. aneura* (mulga) in flowering throughout the year whenever soil moisture is high, but pods are usually formed only in the period September to November.

Without pods specimens of *A. catenulata* are difficult to distinguish from those of *A. aneura* and sometimes *A. leptostachya* but *A. catenulata* is easily recognized in the field. Mature trees have deeply fluted trunks and often rather short horizontal branches.

Prior to its recognition as a distinct species, *A. catenulata* had been the source of some confusion. One syntype of *A. kempeana* F. Muell at MEL (Armadilla, between Warrego and Maranoa Rivers, in 1867, *Barton* 217) should undoubtedly be referred to *A. catenulata.* Maiden associated a fragmentary specimen of *A. catenulata* with a pod and a few attached phyllodes with *A. leptostachya* and Mueller figured the pod of *A. catenulata* as *A. leptostachya,* thus leading Maiden to regard *A. argentea* as being distinct from *A. leptostachya,* see Pedley, Proc. Roy. Soc. Qd 74:56 (1964).

33. Acacia burrowii Maiden, J. & Proc. Roy. Soc. N.S.W. 53:227 (1920); Pedley, Proc. Roy. Soc. Qd 74:53 (1964). **Type:** Narrabri, Sep 1916, *Simon* comm. *Burrow* (NSW, holo; K, iso).

Tree to 12 m tall; branchlets angular, somewhat glutinous and scurfy; young foliage dark. Phyllodes narrowly ovate, broadest on young plants ± acute, 4–10(–11·5) cm long, 4–10(–12) mm wide, 3·5–16(–25) times as long as wide, narrow and elongate on old trees, striate with longitudinal nerves, not anastomosing, 1–3 slightly more prominent; gland small, basal; pulvinus 1–2 mm long. Spikes dense, 1·5–3 mm long on scurfy peduncles 2–5 mm long in pairs on axillary axis (1·5–)4–8 mm long, sometimes growing out into leafy shoot. Flowers 5–merous; calyx sinuately lobed, pubescent at base, a few brown hairs at the top, 0·5–0·8 mm long; corolla glabrous, divided to the middle, 1·5–1·8 mm long, 2·3–3 times as long as the calyx; stamens 2·5–3 mm long; ovary scurfy, pubescent or with only a few long hairs in the upper half. Pod flat, convex over the seeds and slightly contracted between them, up to 11 cm long, 2–3 mm wide. Seeds longitudinal, 4–5 mm long, up to 2 mm wide, areole narrow, elongate, open; funicle with *ca* 6 folds forming basal aril.

LEICHHARDT DISTRICT: Blackdown Tableland, 23°50′S 149°05′E, Sep 1971, *Henderson et al.* 1156. MARANOA DISTRICT: 10 miles [16 km] SW of Yuleba, Aug 1956, *Everist* 5813. DARLING DOWNS DISTRICT: 6 miles [10 km] SW of Kogan, Nov 1961, *Pedley* 904; Inglewood, Sep 1934, *White* 12828.

Acacia burrowii is common on loamy or sandy soils in the Darling Downs and adjacent parts of the Maranoa and Leichhardt Districts. It flowers from August to October.

The species is closely related to *A. blakei* which has usually larger phyllodes. The range of *A. blakei* is a little more coastal and northern than that of *A. burrowii*. I have not seen the two growing together naturally though there are large areas north of Miles occupied by *A. blakei* which appears to be suitable for *A. burrowii*.

34. Acacia blakei Pedley, Contrib. Qd Herb. 15:6 (1974). **Type:** 7 miles S of Warwick, Oct 1958, *Pedley* 323 (BRI, holo; A, CANB, K, iso).

Misapplied name: *A. cheelii* auct. non Blakely; C. T. White, Proc. Roy. Soc. Qd 50:71 (1939).

Tree to 13 m tall with dark fissured bark; branchlets slender, somewhat angular, becoming terete, glabrous or slightly scurfy or sometimes, on young plants, sparse short hairs. Phyllodes straight or slightly falcate, glabrous or with sparse pubescence on young plants, 5–17 cm long, 7–18(–22) mm wide, 6–20 times as long as wide, 2–3 cm wide and 2–3 times as long as wide on young plants, many parallel longitudinal nerves, (2–)3 more prominent than the rest, neither anastomosing nor concurrent with margin at the base; gland small, basal; pulvinus 3–5 mm long. Spikes dense 3–4·5 cm long, sometimes curved because of lag in opening of flowers on lower side, on peduncles 3–4 mm long, usually arranged in pairs on axillary shoot up to 12 mm long which sometimes grows out into a leafy shoot, spikes sometimes in terminal panicles due to reduction of phyllodes. Flowers 5–merous; calyx membranous, truncate or sinuately lobed, 0·6–0·8 mm long, glabrous or pubescent in the lower half, with short brown hairs at the top; corolla rather thick, glabrous, lobed to the middle, 1·2–1·6 mm long, 2–2·5 times as long as the calyx; stamens 2–3 mm long; ovary glabrous or pubescent with short appressed hairs. Pod linear, flat but convex over the seeds, up to 10 cm long, 2–3 mm wide; seeds longitudinal, 3·5–4 mm long, 1·6–1·8 mm wide, with a long, narrow, open areole; funicle 2–3 times folded into a basal aril.

MITCHELL DISTRICT: Dividing Range *ca* 65 km NNE of Tambo, 24°15′S 146°25′E, Nov 1968, *Pedley* 2806. LEICHHARDT DISTRICT: *ca* 18 miles [30 km] from Cracow on Taroom Road, Aug 1962, *Johnson & Everist* 2511. MARANOA DISTRICT: "Yoothapinna", 25°20′S 148°18′E, Sep 1974, *Gittins* 2752. DARLING DOWNS DISTRICT: between Miles & Chinchilla, Oct 1937, *Brass & White* 348. BURNETT DISTRICT: 16 miles [26 km] WSW of Mundubbera, Sep 1969, *Pedley* 2893. MORETON DISTRICT: near Mt Alford, 28°04′S 152°34′E, Oct 1972, *Pedley* 4001.

Field studies made after the original description of *A. blakei* was published indicate that the species is not restricted to the Mt Edwards and Warick areas as stated in the protologue, but has a much wider geographic range. It is particularly common around Miles where it often forms dense stands with either *A. crassa* or *A. julifera*. It extends to the Burnett and Leichhardt districts but is less common there. The description of *A. blakei* has been modified to allow for longer and more elongate phyllodes and more pubescent calyxes found in these more northern populations. *A. blakei* flowers from August to October.

In general appearance *A. blakei* resembles *A. julifera* but it has flat pods and broad juvenile phyllodes which are at most only sparsely pubescent, whereas the pods of *A. julifera* are terete and its juvenile phyllodes densely pubescent. Blakely (*in litt.* Qd herb. records) identified *Brass & White* 348 as "*A. cheelii*, but not quite typical. The branchlets are non-glaucous, phyllodia straighter and the spikes more slender than in the typical form". *A. cheelii* is characterised by its densely golden-pubescent calyx very much shorter than the corolla. It is not particularly closely related to *A. blakei*.

35. Acacia crassicarpa A. Cunn. ex Benth., London J. Bot. 1:379 (1842); C. T. White, Proc. Roy. Soc. Qd 57:22 (1946), *pro syn.;* Pedley, Contrib. Qd Herb. 18:15 (1975). **Type:** Lizard I., Aug $\frac{119}{1820}$, *Cunningham* (K; BM, iso; lectotypus novus)

Tree to about 8 m tall; branchlets angular, scurfy. Phyllodes glabrous, curved, ± acute, narrowed gradually into the pulvinus, 11–20 cm long, 1–3·5 (–4·5) cm wide, 2·5–12 times as long as wide with 3–5 yellowish longitudinal nerves prominent, tending to run into lower margin at the base, secondary nerves crowded, not anastomosing; gland basal, a prominent swelling and a small orifice; pulvinus (4–)5–12(–16) mm long. Spikes moderately dense, 4·5–6 cm long on scurfy peduncles 5–10 mm long in groups of 2–6 in upper axils. Flowers 5–merous; calyx 0·5–0·7 mm long, membranous, ± glabrous with scurfy, concave lobes; corolla widely spreading, glabrous, 1·3–1·6 mm long, 2–2·8 times as long as the calyx, lobed to the middle; stamens 2–3 mm long; ovary shortly pubescent, hairs denser at top. Pod woody, flat, glabrous, the margins ± straight transversely but hardly reticulately nerved, to 8 cm long, 2·5–3·5 mm wide. Seeds transverse, *ca* 6 mm long and 3 mm wide; areole large and almost closed; funicle folded and thickened, forming long aril beneath seed. (Fig. 9j, inflorescence; 10m, pod)

COOK DISTRICT: Mapoon, May 1901, *J. F. Bailey;* Davies Creek, Mareeba District, Apr 1962, *McKee* 9325. NORTH KENNEDY DISTRICT: Magnetic I., Mar 1922, *White* 1623.

A. crassicarpa is common in eucalypt open-forest in coastal areas north of about Townsville, often in association with *A. leptocarpa*. It is sympatric with *A. aulacocarpa* to which it is closely allied but *A. aulacocarpa* is usually found on wetter sites. See *A. aulacocarpa* for further discussion.

White who had not seen type material referred *A. crassicarpa* to *A. aulacocarpa* var. *macrocarpa* which he distinguished from *A. aulacocarpa* var. *aulacocarpa* by its wider and woodier pods. I have not seen the type of *A. aulacocarpa* var. *macrocarpa,* but I consider it should be referred to *A. aulacocarpa* with *A. crassicarpa* being specifically distinct.

36. Acacia aulacocarpa A. Cunn. ex Benth., London J. Bot. 1:378 (1842); Pedley, Contrib. Qd Herb. 18:16 (1975). **Syntypes:** Port Bowen, 3rd Voyage of "Mermaid", July $\frac{115 \text{ \& } 116}{1820}$, Cunningham (K; BM, iso).

A. aulacocarpa var. (?) *macrocarpa* Benth., Fl. Aust. 2:410 (1864); White, Proc. Roy. Soc. Qd 57:22 (1946). **Type:** not seen.

A. lamprocarpa O. Schwarz, Repert. Spec. Nov. Regn. Veg. 24:86 (1927). **Type:** Darwin, Nov 1929, *Bleeser* 456 (MEL, iso)

Shrub or tree to 15 m; branchlets slender, angular, somewhat hoary and sometimes glutinous. Phyllodes glabrous, straight or falcate, acute or subacute, 5–15 cm long, 6–25(–30) mm wide, 3–12 times as long as wide; 1–3 prominent longitudinal nerves, somewhat crowded towards lower margin at the base and numerous, ± parallel, secondary nerves, not anastomosing; gland basal, prominent swelling and small orifice; pulvinus 4–7 mm long. Spikes, usually at least moderately dense, 2–5·5 cm long, on scurfy peduncles 2–7 mm long, single or in pairs at the base of rudimentary axillary shoots. Flowers 5–merous; calyx 0·5–1 mm long, membranous, with broad obtuse scurfy lobes 0·2–0·3 mm long; corolla 1·5–1·9 mm long, lobed to the middle, glabrous, 2–3 times as long as the calyx; stamens *ca* 3 mm long; ovary shortly pubescent, scurfy. Pod glabrous, somewhat woody, prominently obliquely transversely veined, straight or twisted when old, up to 10 cm long, 1–2 cm wide. Seeds transverse *ca* 5·5 mm long and 2·5 mm wide; areole, large, open; funicle flat, rather broad, folded *ca* 5 times forming aril beneath seed.

36a. A. aulacocarpa var. **aulacocarpa.**

Tree; phyllodes with crowded nerves, 7–15 cm long, 4–12 times as long as wide; calyx 0·7–1 mm long; pods usually 1·5–2 cm wide.

BURKE DISTRICT: 25 miles [40 km] N of Turn-off Lagoon, Jun 1966, *Pedley* 2079. COOK DISTRICT: Iron Range, 12°39'S 143°13'E, Aug 1965, *Gittins* 1066; Gadgarra, Jun 1929, *Kajewski* 1083. NORTH KENNEDY DISTRICT: Magnetic I., Jul 1938, *Goy* 335. LEICHHARDT DISTRICT: Boothill Creek, 10 miles [16 km] S of Nebo turn-off on Bruce Highway, Jun 1958, *Pedley* 273. PORT CURTIS DISTRICT: Byfield, Sep 1931, *White* 8038; Rosedale, *Dovey* 39. WIDE BAY DISTRICT: Fraser I., Oct 1930, *Hubbard* 4614. BURNETT DISTRICT: Nanango, Mar 1919, *Grove.* MORETON DISTRICT: Mt Cotton, Feb 1935, *Everist* 1004.

36b. A. aulacocarpa var. **fruticosa** C. T. White, Proc. Roy. Soc. Qd 57:23 (1946). **Type:** Mt Ngun Ngun, alt. 800 ft, Mar 1931, *White* 7651 (BRI, holo)

Shrub to *ca* 3 m; nerves of phyllodes less crowded; phyllodes 5–10 cm long, 3–5 times as long as wide; calyx 0·5–0·6 mm long; pods 1–1·2 cm wide.

WIDE BAY DISTRICT: Mt Tinbeerwah near Cooroy, Apr 1962, *Everist* 7168. MORETON DISTRICT: Mt Ngun Ngun, Mar 1931, *Hubbard* 5911.

Acacia aulacocarpa (hickory wattle) has an extraordinarily wide range, extending from about the Richmond River in New South Wales to southern New Guinea and the northern part of the Northern Territory. It is found along the entire eastern coast of Queensland, on both sides of northern part of Cape York Peninsula and in the western part of the Gulf of Carpentaria. The ecological range of the species is also noteworthy. In southern Queensland it reaches its greatest size and density on alluvial soils along streams and on the edges of rainforests, but extends into eucalypt open forest on less fertile soil where it, *A. concurrens* and *A. penninervis* are often extremely common. *A. aulacocarpa* var. *fruticosa* is found on skeletal soils on peaks in coastal southern Queensland. In north Queensland *A. aulacocarpa* is found on the margins of and sometimes in rainforests on the eastern Atherton Tableland, McIlwraith and Iron Ranges, but also in eucalypt open-forest especially along creeks. North of about Townsville *A. aulacocarpa* and the nearly related *A. crassicarpa* are sympatric. *A. aulacocarpa,* however, grows usually on better watered and more fertile soils along drainage lines and streams.

Flowering extends from February to April in subtropical, and from April to June in tropical regions. Fruits mature in the second half of the year.

Considering its large geographical and ecological range, the species does not show a particularly wide range of variability. *A. aulacocarpa* var. *fruticosa* with narrow pods and shrubby habit is the only variant formally recognized. Further studies may reveal that narrow-phylloded plants from the southern part of the Atherton Tableland may constitute another infra-specific taxon.

I have not seen type material of *A. aulacocarpa* var. *macrocarpa.* White who saw no type material at all, treated *A. crassicarpa* as a synonym of *A. aulacocarpa* var. *macrocarpa.* Bentham's description however suggests that *A. aulacocarpa* var. *macrocarpa* falls within the circumscription of what I have considered *A. aulacocarpa* var. *aulacocarpa* though the pods (to 2·5 cm broad) are rather large. The pods being "much undulate" as well as the localities cited exclude from consideration *A. crassicarpa.*

37. Acacia rhodoxylon Maiden, J. & Proc. Roy. Soc. N.S.W. 53:223 (1920). **Type:** Eidsvold, *Bancroft* 19 (NSW, holo).

Tree to 16 m; bark thin, black, peeling in small curved flakes (likened by Maiden to a French fowl); branchlets angular, glabrous, glutinous, sometimes scurfy; young tips dark. Phyllodes coriaceous, so thick as to make nervature indistinct, glabrous, straight or somewhat curved, (6–)7–9·5(–13·5) cm long, 7·5–20 mm wide, 3·5–8(–14) times as long as wide, many parallel crowded indistinct longitudinal nerves, 3–5 slightly more prominent than the rest; gland basal, inconspicuous; pulvinus 4–5 mm long. Spikes 2–3 cm long, dense, on scurfy peduncles 1–2 cm long in pairs or single at the base of a rudimentary axillary shoot, one spike sometimes markedly more developed than the other. Flowers 5–merous; calyx membranous, *ca* 0·8 mm long, ± truncate or with ovate lobes 0·2 mm long, fimbriate at the top and usually with a few longish hairs at the base; corolla 1·2–1·5 mm long, 1·5–2 times as long as the calyx, lobed to about the middle; stamens 2·5–3 mm long; ovary glabrous or somewhat scurfy. Pod flat, glabrous, slightly shining, 3·5–4·5 cm long, 5–6 mm wide. Seeds longitudinal, *ca* 3·5 mm long and 2·5 mm wide, longitudinal or slightly oblique; areole small, open, central, much broader than long.

PORT CURTIS DISTRICT: between Raglan & Marmor, Jun 1962, *Pedley* 1022. LEICHHARDT DISTRICT: Clermont, Mar 1927, *White* 3458. BURNETT DISTRICT: 20 km NE of Eidsvold, Dec 1972, *Pedley* 4016.

Acacia rhodoxylon (rosewood or ringy rosewood) occurs in coastal and subcoastal parts of central Queensland from Eidsvold to a little north of Clermont. One specimen in young bud only from Mt Garnet, about 600 km NNW of Clermont, is tentatively included as well. Flowering trees are not particularly striking but from the relatively few collections it appears to flower sporadically throughout the year.

The rather thick phyllodes with indistinct nerves, long peduncles and unusual finely flaking bark sets the species apart from all others and permits easy identification, particularly in the field.

38. Acacia whitei Maiden, Proc. Roy. Soc. Qd 30:125 (1918). **Type:** Stannary Hills, in 1910, *Bancroft* (NSW, holo)

Shrub to *ca* 2 m tall, sometimes flowering when very small, branchlets angular, glabrous. Phyllodes straight, linear lanceolate to elliptic, 5–15 cm long, 2·5–10 mm wide, 5–60 times as long as wide, midrib prominent, 3–7 other less prominent nerves on each side of midrib, not anastomosing, venation conspicuous in fresh material; gland basal, small and inconspicuous; pulvinus *ca* 1 mm long. Spikes fairly dense, 1·5–2·5 cm long on glabrous, axillary peduncles less than 5 mm long, rachis glabrous. Flowers 4–(or rarely 5–)merous; calyx glabrous, *ca* 1 mm long with lobes *ca* 0·3 mm long; corolla glabrous, lobed to about the middle, *ca* 2·5 mm long; stamens *ca* 2·5 mm; ovary pubescent. Pod flat linear, with prominent raised pale margins, up to 7 cm long, 5–10 mm wide, glabrous. Seeds longitudinal, *ca* 5·5 mm long, 4·5 mm wide, rather thick; areole small, central, closed, surrounded by a conspicuous pale area; funicle thick and folded only once beneath seed. (Fig. 10d, pod).

COOK DISTRICT: Davies Creek, Apr 1962, *McKee* 9332; between Herberton & Watsonville, Jul 1967, *Brass* 33611. NORTH KENNEDY DISTRICT: 13 km from Paluma on Ewan Road, 19°01'S 146°05'E, Aug 1972, *Gittins* 2514.

Acacia whitei is found on shallow stony soils in eucalypt communities in the Davies Creek area (SE of Mareeba), the Herberton-Watsonville area and the Paluma Range (NW of Townsville). It appears to flower and fruit sporadically throughout the year. It does not seem to be closely related to any other Queensland species though it does resemble *A. hyaloneura* to some extent.

39. Acacia drepanocarpa F. Muell., J. Proc. Linn. Soc. Bot. 3:137 (1859), Icon. Aust. Sp. Acacia dec. 11 (1888); Benth., Fl. Aust. 2:402 (1864). **Type:** Roper River, *Mueller* 27 (K, iso).

Shrub to *ca* 3 m tall; branchlets yellowish, slender, angular, glabrous and glutinous. Phyllodes glabrous, linear, acute, 4·5–12 cm long, 1·5–11 mm wide, 5–60 times as long as wide, a yellowish raised midrib prominent with 1, 3 or rarely 5, raised less prominent, sometimes translucent nerves on each side, with intermediate finer nerves, anastomosing especially when phyllodes are broad; gland basal or up to 1 cm from the base, the margin of the phyllode sometimes bent at the gland; pulvinus 0·5–1 mm long. Spikes dense, 1·5–2·5 cm long on glabrous peduncles 8–10 mm long single or in pairs in the axils. Flowers 5–merous; calyx membranous, glabrous, somewhat incurved at the top, *ca* 1 mm long with

lobes *ca* 0·2 mm long; corolla 1·8 mm long with lobes *ca* 0·3 mm long, not closely enclosed by the calyx; stamens *ca* 3 mm long; ovary tomentose. Pods *ca* 8 cm long, 6 mm wide near the top narrowed to the base, the valves woody, opening elastically from the apex.

39a. A. drepanocarpa subsp. **drepanocarpa**

Phyllodes up to 12 cm long, 1·5–3·5 mm wide, 20–60 times as long as wide; gland 4–10 mm from the base.

Not found in Queensland.

39b. A. drepanocarpa subsp. **latifolia** Pedley, Contrib. Qd Herb. 15:10 (1974). **Type:** Northern Territory: 36 miles W of "Soudan", Jun 1960, *Chippendale* NT7307 (BRI, holo).

Phyllodes up to 7·5 cm long, 4–11 mm wide, 5–13 times as long as wide; gland basal or up to 2 mm from the base.

GREGORY NORTH DISTRICT: Pilpah Hills, "Barkly Downs", Oct 1962, *Pedley* 1078.

Acacia drepanocarpa is widely distributed in the Northern Territory, but has been collected only once in Queensland, near the boundary of the Northern Territory (subsp. *latifolia*). A sterile specimen from near Pentland (*Pedley* 2120) previously referred to *A. drepanocarpa* subsp. *drepanocarpa* (Contrib. Qd Herb. 15. fig. 2A. 1974) is probably *A. adsurgens*.

In the protologue Mueller did not describe flowers. Bentham cited the type and another specimen(s), *Henne* (Palm and Whitsunday Islands) and described the flowers. Maiden in his description of *A. tanumbirinensis* (*in* Ewart & Davies: Fl. North. Terr. 338. 1917) pointed out that Bentham's description of the calyx was not correct. The phyllodes illustrated by Mueller (1888) are hardly those of *A. drepanocarpa,* especially in their having more than one gland, though they were not commented on by Maiden. I have not seen the *Henne* specimen cited by Bentham.

40. Acacia ancistrocarpa Maiden & Blakely, J. Roy. Soc. West. Aust. 13:31 (1928). **Syntypes:** between Minderoo & Globe Hill, Ashburton River, Sep 1905, *Morrison* (K, iso); Barrow Creek, May 1922, *White* 81 K, MEL, iso); Darwin to Pine Creek, *Jensen* in *Allen* 209 (not seen).

Shrub, with bright green foliage, to 4 m tall; branchlets glabrous; slightly glutinous, angular, slender, yellow. Phyllodes coriaceous, slightly curved, broadest above the middle, 9·5–18 cm long, 3–6(–7) mm wide, 19–40(–60) times as long as wide, one yellowish longitudinal nerve prominent, other longitudinal nerves indistinct but not anastomosing, margins yellowish; gland basal, slightly projecting with rimmed orifice; pulvinus 1–2 mm long. Spikes dense, 1·5–2 cm long, on glabrous peduncles 5–8 mm long, single or in pairs at the base of a rudimentary axillary shoot. Flowers 5–merous; calyx broad at the top, 0·5–0·8 mm long, with lobes 0·15–0·25 mm long with fringing hairs; corolla glabrous, lobed to the middle, 1·5 mm long, 2–3 times as long as the calyx; stamens *ca* 3·5 mm long; ovary densely pubescent. Pod woody, slightly glutinous, obliquely nerved, flat but raised over the seeds, 7·5 cm long, up to 12 mm wide, valves rolling back elastically as in *A. arida* and other species. Seeds obliquely transverse, 7 mm long, 4·5 mm wide; areole closed, fairly large.

BURKE DISTRICT: "Barkly Downs", May 1948, *Perry* 739. GREGORY NORTH DISTRICT: "Oban", 60 miles [96 km] SW of Mt Isa, Nov 1938, *Everist* 1691.

Acacia ancistrocarpa is found in Queensland on sandy red earths in the Mt Isa–Urandangie area, but extends to the Northern Territory and Western Australia. Flowers are produced from May to July.

It has already been shown (Contrib. Qd Herb. 15:13. 1974) that one of the syntypes of *A. pachycarpa* F. Muell. ex Benth. should properly be referred to *A. ancistrocarpa.* The choice of the lectotype *A. pachycarpa* has however determined the correct application of the name *A. ancistrocarpa.*

41. Acacia shirleyi Maiden, Proc. Roy. Soc. Qd 53:218 (1920). **Type:** Mount Rose, Eidsvold, Nov 1912, *Bancroft* 14 (NSW, holo; BM, K, iso). *A. doratoxylon* A. Cunn. var. *laxiflora* Domin, Biblioth. Bot. 89:268 (1926). **Type:** Mt Remarkable apud. opp. Pentland, Mar 1910 *Domin* "5090" (PR, holo).

Tree to 15 m with rough fissured dark bark; branchlets angular, glabrous, yellowish, sometimes resinous or mealy or with brown scurf; young tips dark. Phyllodes coriaceous, linear, straight or curved, (8·5–)10–15(–18) cm long, 2–7(–9) mm wide, 16–45(–65) times as long as wide, striate with many parallel, non-anastomosing nerves, the central one usually more prominent. Spikes moderately dense 2–3·5 cm long on peduncles, sometimes appressed pubescent at the base, 5–9 mm long, single or in pairs on a rudimentary axillary axis sometimes growing out into a leafy shoot. Flowers 5–merous; calyx 0·5–0·8 mm long with densely hirsute obtuse lobes 0·2–0·3 mm long; corolla lobes glabrous, united to about the middle, strongly reflexed, 1·5–1·9 mm long as the calyx; stamens *ca* 3 mm long; ovary densely pubescent. Pod somewhat woody, longitudinally wrinkled, resinous, raised over the seeds and slightly contracted between them, *ca* 12 cm long, 4·5 mm wide. Seeds longitudinal, 4 mm long, 2·5 mm wide; areole semicircular, small central (cf, *A. petraea*)., funicle expanded and folded about four times forming basal aril.

BURKE DISTRICT: Selwyn, May 1963, *Gittins* 717. COOK DISTRICT: 37 miles [59 km] S of Forsayth, Jul 1953, *Lazarides* 3862. NORTH KENNEDY DISTRICT: 19 miles [30 km] W of "Greenvale" Stn, Jul 1954, *Lazarides* 4668. GREGORY NORTH DISTRICT: "Tranby", May 1936, *Blake* 11390. MITCHELL DISTRICT: Joycedale, 13 miles [21 km] SSW of Jericho, Nov 1968, *Pedley* 2815. SOUTH KENNEDY DISTRICT: "Beresford", 50 miles [80 km] WNW of Clermont, Jul 1964, *Pedley* 1732. LEICHHARDT DISTRICT: 56 miles [90 km] SW of Nebo, Jun 1962, *Story & Yapp* 37; *ca* 50 miles [80 km] from Injune on Rolleston Road, Apr 1961, *Johnson* 2141. DARLING DOWNS DISTRICT: 16 km W of Miles, Apr 1971, *Henderson et al.* 906. BURNETT DISTRICT: Eidsvold, *Bancroft.*

Acacia shirleyi (lancewood) is confined to shallow gravelly soils on scarps of weathered sandstone or on shallow sandy soil overlying weathered sandstone. It ranges from the northern parts of the Darling Downs District to a little north of Mt Isa and the Northern Territory. It is absent from coastal districts, from the south-western part of the State and from Cape York Peninsula. Like *A. catenulata* and *A. petraea* which occupy similar habitats in the south-west, *A. shirleyi* forms dense pure stands, occasionally with emergent eucalypts. In the headwaters of Alpha Creek south of Alpha stands of *A. catenulata* and *A. shirleyi* adjoin but do not mix.

A. shirleyi resembles *A. petraea* and *A. adsurgens* in characters of the phyllodes, pods and seeds. The first two both occur on weathered sedimentary rocks but *A. adsurgens* commonly occurs on sand plain with spinifex (*Triodia* spp.).

42. Acacia petraea Pedley, Contrib. Qd Herb. 15:14 (1974). **Type:** North-western extremity of Gowan Range, SE of Emmet, Jul 1963, *Everist* 7321 (BRI, holo).

Tree to 10 m tall; branchlets angular, at first with dense appressed hairs, soon glabrous. Phyllodes coriaceous linear straight or curved, acute glabrous 13·5–26 cm long, 2·5–6 mm wide, 22–95(–110) times as long as wide, with one longitudinal nerve slightly prominent and the others fine numerous parallel, not anastomosing. Spikes dense, 1–2·5 cm long, in pairs on short rudimentary axillary shoot, the axis 2–4 cm long and peduncles (2–)10–15 mm long. Flowers 5–merous; calyx membranous 0·7–1·2 mm long, shortly lobed, pubescent with sometimes brown hairs; corolla lobes united to the middle, glabrous, 1·9–2·1 mm long, 1·8–2·5 times as long as calyx; stamens 3·5–4 mm long; ovary pubescent with appressed hairs. Pod flat but convex over the seeds and slightly contracted between them, 8·5 cm long, 3·5 mm broad. Seeds longitudinal 4·5 mm long, 2·5 mm broad with a very short pale areole; funicle flat twice folded towards the apex.

WARREGO DISTRICT: 35 miles [56 km] E of Quilpie, 26°49′S 144°49′E, Nov 1968, *Pedley* 2823. "Tarko", 35 miles [56 km] SW of Eulo, Aug 1967, *Davidson*.

The species which is usually known as lancewood occurs on lateritic scarps in the Grey Range and its outliers. Other species also closely associated with laterite in south-western Queensland are *A. catenulata, A. clivicola, A. ensifolia* and *A. microsperma*. It has previously been referred to *A. doratoxylon* A. Cunn. which however has usually shorter phyllodes, the rudimentary axis bearing the peduncles better developed, somewhat smaller flowers, and the areole of the seed elongate, narrow and not paler than the rest of the seed. The short pale areole possibly indicates a relationship to *A. shirleyi* which occupies similar habitats in less arid parts of northern Australia, and to *A. adsurgens*.

43. Acacia sparsiflora Maiden, J. & Proc. Roy. Soc. N.S.W. 53:221 (1920). **Type:** Eidsvold, *Bancroft* 5 (NSW, holo).

A tree to 15 m tall, with rough bark; branchlets slender, angular, glabrous or with scattered hairs. Phyllodes rather thin, curved, ± acute, glabrous or with scattered hairs, elliptic with dense appressed hairs *ca* 0·15 mm long on young plants; many fine parallel nerves, 1(–3) more prominent than the others, not anastomosing; (8–)9·5–16(–19) cm long, (2–)5–8(–13) mm wide, 7–25(–50) times as long as wide, on young plants as little as 4 cm long and 4 times as long as wide. Spikes sparse, 2–4·5 cm long, on glabrous peduncles 5–10 mm long, in pairs at the base of a rudimentary shoot which may grow out into a leafy branch. Flowers 5–merous; calyx cartilaginous, 0·8–1 mm long, glabrous at the tops of the sinuous lobes, sinuses broad; corolla 1·8–2·1 mm long, 2–2·4 times as long as the calyx, lobes *ca* 3 times as long as the tube, shortly ciliate in upper half and with a tuft of hairs at the rather thick apex; stamens 2·5–3 mm long; ovary densely pubescent all over, or only in the upper half. Pod 9 cm long, 3 mm wide, flat, slightly constricted between the seeds and slightly convex over them, glabrous, with prominent margins. Seeds longitudinal, 5 mm long, 2 mm wide; areole large, open, elongate; funicle with about 7 folds forming prominent basal aril.

SOUTH KENNEDY DISTRICT: "Logan Downs" Stn, Aug 1964, *Pedley* 1740. LEICHHARDT DISTRICT: "Mt Playfair" Stn, Aug 1956, *Biddulph* 17. MARANOA DISTRICT: Ooline, 20 miles [32 km] W of Mitchell, Apr 1936, *Blake* 10961. DARLING DOWNS DISTRICT: "Glenoie", near Hannaford, Apr 1939, *Everist* 1744. BURNETT DISTRICT: Eidsvold, *Bancroft*.

Acacia sparsiflora is most common in the western part of the Darling Downs District but there are isolated stands in the South Kennedy and Leichhardt Districts. It usually forms dense stands (sometimes with *A. shirleyi*) on shallow soils, often overlying weathered sandstone. It flowers from May to August.

Young plants of *A. sparsiflora* are densely appressed pubescent with elliptic phyllodes and do not resemble mature plants which have narrow, markedly falcate, subglabrous phyllodes. Trees with "intermediate" foliage resemble *A. burrowii,* but the two species are not closely related.

The type locality is Eidsvold, but Bancroft seems to have been the only person to have collected the plant in the vicinity of Eidsvold. I suspect that Bancroft's Eidsvold specimens were collected over a wide area. It is likely that the type locality for *A. sparsiflora* is north of Chinchilla rather than Eidsvold.

44. Acacia kempeana F. Muell., Aust. Chem. & Druggist 5:26 (1882). **Type:** Finke River, *Kempe* (MEL: lectotypus novus).

A. sibirica S. Moore, J. Linn. Soc. Bot. 34:189 (1899). **Type:** Siberia Rock, Western Australian Goldfields [75 km NW of Kalgoorlie], Jan 1895, *Moore* (BM, holo).

Spreading shrub or small tree to *ca* 5 m tall; branchlets angular slightly scurfy, young tips dark. Phyllodes straight or sharply curved a little above the base, glabrous, 3–6 cm long, 4–10 mm wide, 4–9(–13) times as long as wide; usually obtuse, widest near the top and narrowed to the base, many close parallel nerves, one sometimes more prominent than the rest; gland ± basal; pulvinus (1–)2(–3) mm long. Spikes moderately dense 1–1·5(–2) cm long on peduncles, 5–10 mm long in pairs in the upper axils. Flowers 5–merous; calyx cylindrical, some long hairs at the base 0·6–0·8 mm long, shortly lobed; corolla glabrous, 1·5–1·7 mm long, 2–2·5 times as long as the calyx; stamens *ca* 3 mm long; ovary glabrous. Pods shortly stipitate, flat, 3–6 cm long, 1–1·4 cm wide, the valves chartaceous. Seeds transverse, 4–5 mm long, *ca* 2 mm wide; areole small narrow open surrounded by pale area; funicle folded about 4 times forming prominent basal aril.

GREGORY NORTH DISTRICT: *ca* 155 km NW of Windorah, 24°52'S 141°18'E, May 1973, *Boyland.*

Acacia kempeana (witchetty bush) is widespread in arid areas of Australia where it occurs usually on stony hillsides or on coarse textured alluvial soils. In Queensland it is common on sand-plain with mulga in the vicinity of Windorah. Like *A. aneura, A. kempeana* probably flowers whenever temperature and soil moisture are high, though it appears from herbarium specimens that mature fruit are found mainly in September.

A. kempeana and *A. clivicola* are closely related. The latter has narrower phyllodes and pods with oblique seeds. Where the ranges of the two species adjoin in north-western Queensland populations intermediate between the two sometimes occur.

A lectotype has been chosen, mainly to exclude one of the other syntypes (between Warrego and Manaroa, *Barton.* MEL) from consideration as a possible lectotype. This is *A. catenulata.*

45. Acacia clivicola Pedley, Contrib. Qd Herb. 15:7 (1974). **Type:** Gregory South District: nr Pinkella about 40 miles [64 km] from Quilpie on Windorah Road, Mar 1960, *Johnson* 1508 (BRI, holo; NT, iso).

Shrub up to 2·5 m high with branches obliquely ascending from the short trunk; branchlets slender angular somewhat resinous and scurfy; young shoots often brownish. Phyllodes linear sometimes terete, the broadest part a little above the middle, glabrous coriaceous, (2–)3–6(–7) cm long, (0·7–)1–3(–4) mm broad, 9–14(–60) times as long as broad, nerves parallel ± equal numerous slender and not anastomosing; a prominent gland with a small orifice at the base or 2–5 mm from the base, with the margin of the phyllode and the phyllode bent at the gland. Spikes dense 3–7(–12) mm long in pairs in the upper axils with slightly scurfy peduncles 3–8 mm long; bracteoles peltate with a scurfy lamina 0·4 mm wide. Flowers 5–merous; calyx (0·6–)0·7–0·9 mm long, densely pubescent with lobes 0·15 mm long; corolla lobes glabrous joined to the middle, 1·5–1·8 mm long, 2–2·7 times as long as the calyx; stamens 2·5–3 mm long; ovary slightly scurfy sometimes smooth. Pod flat convex over the seeds alternately on each side, glabrous or glutinous, to 5 cm long, 4–7(–10) mm wide, transversely nerved. Seeds obliquely transverse, *ca* 3 mm long, 2–2·5 mm broad, funicle gradually thickened folded about 4 times making a somewhat broad cupular aril.

BURKE DISTRICT: Selwyn, Feb 1959, *Sillar*. GREGORY NORTH DISTRICT: "Roxborough Downs", *ca* 80 miles [130 km] SE of Urandangie, Nov 1948, *Everist* 3603. MITCHELL DISTRICT: 54 miles [86 km] W of Yaraka, Aug 1963, *Everist* 7376. GREGORY SOUTH DISTRICT: 7 miles [12 km] E of Windorah, Jun 1949, *Everist* 3890. WARREGO DISTRICT: 33 miles [53 km] E of Adavale, Sep 1967, *Pedley* 2501. MARANOA DISTRICT: "Boatman" Stn, Apr 1948, *Everist* 3429.

Acacia clivicola (bastard mulga) is most common on shallow soil overlying lateritic pavement. It is a feature of "mulga country" between the Warrego River and the Grey Range, but it ranges from there to the Georgina basin south of Urandangie. It appears to flower and fruit sporadically throughout the year.

A. clivicola closely resembles *A. kempeana* and what may be intermediates with that species are found in the north-western part of its range. For the most part, however it is readily distinguished by its narrow phyllodes and oblique seeds and warrants recognition as a species. Despite its common name it is not closely related to *A. aneura*.

46. Acacia hammondii Maiden, J. & Proc. Roy. Soc. N.S.W. 51:95 (1917). **Type:** Lower Victoria River, *Mueller* 93 (NSW, holo; K, iso).

A. sphaerogemma Maiden & Blakely, J. Roy. Soc. W.A. 13:30 (1927). **Type:** Walmudja, Roper River, May 1921, *N. B. Tindale* (NSW, holo; K, iso).

Misapplied name: *A. plectocarpa* auct. non Benth.; F. Muell., Icon. Aust. Sp. Acacia dec. 10 (1888).

Tree to *ca* 4 m tall with rather fibrous bark; branchlets angular, slender, glutinous, glabrous or with scattered curved hairs. Phyllodes rather stiff, straight, acute, sometimes with an oblique mucro, glabrous or sparsely pubescent at base (4–)6–9(–11) cm long, (2–)3–5(–6) mm wide, 11–22(–33) times as long as wide, many close ± parallel longitudinal nerves, not anastomosing, two more prominent than the rest; gland basal with a small rimmed orifice; pulvinus *ca* 1 mm long. Spikes dense, 1·2–2·5 cm long on glabrous or sparsely pubescent peduncles 3–7(–10) mm long, single in the axils. Flowers 5–merous; calyx membranous, glabrous except for a few fringing hairs, 0·7–0·9 mm long, with lobes

0·2–0·3 mm long; corolla glabrous, deeply lobed, 1·4–1·9 mm long, 2–2·2 times as long as the calyx; stamens 2–2·5 mm long; ovary densely pubescent. Pod brown, shiny, glabrous, margins yellow, flat but raised over the seeds alternately on each side, *ca* 5 cm long and 8 mm wide. Seeds transverse, 4–5 mm long, *ca* 2·5 mm wide; areole small, elongate open; funicle forming clavate aril.

BURKE DISTRICT: 14 miles [22 km] E of "Iffley" Stn, Aug 1953, *Lazarides* 3937. COOK DISTRICT: Lappa Junction, Jun 1962, *Gittins* 540B.

Acacia hammondii occurs on sandy and stony soil in eucalypt woodland. It is fairly common in north-western Queensland and extends to the western part of the Atherton Tableland but is not common in the eastern part of its range. It flowers in June and July and mature fruit have been collected in August and September.

In the protologue Maiden noted Mueller's misidentification of *A. hammondii* as *A. plectocarpa,* a species not known to occur in Queensland. The type of *A. sphaerogemma* has narrower phyllodes than much of the material of *A. hammondii* but the two are certainly conspecific.

47. Acacia solandri Benth., Fl. Aust. 2:406 (1864); Pedley, Contrib. Qd Herb 18:20. 1975). **Type:** Bay of Inlets, *Banks & Solander* (BM, holo).

Tree to *ca* 12 m tall with slender, angular, glabrous branchlets, young plants possibly with pubescent stems and phyllodes. Phyllodes glabrous falcate, broadest above the middle, 9–17 cm long, 6–16 mm broad, 9–22 times as long as broad; two major longitudinal nerves, sometimes concurrent with each other or running into ventral margin near the base and many crowded somewhat anastomosing secondary nerves; gland basal or subbasal; pulvinus 2–4 mm long. Spikes open 3–8 cm long with glabrous rachis, on glabrous peduncles 5–10 mm long in axillary pairs. Flowers 5–merous; calyx cylindrical, glabrous, 0·8–1 mm long, sinuately lobed; corolla 1·8–2·5 mm long, glabrous divided to middle with lobes strongly reflexed, 2–2·5 times as long as calyx; stamens 2·5–3·5 mm long; ovary densely pubescent. Pod flat, sometimes raised over the seeds, glabrous, coiled up to 10 cm long, 3·5–5 mm broad; seeds longitudinal or slightly oblique when pod broad, seeds 3·5–5 mm long, 2·5–3·5 mm wide, areole very large, open; funicle folded many times beneath seed forming aril almost as long as seed (Fig. 10e, pod).

NORTH KENNEDY DISTRICT: Long I., Jun 1962, *Pedley* 1029. SOUTH KENNEDY DISTRICT: Hillsborough Nat. Park, 21°S 149°E, Nov 1971, *McDonald* 24.

Acacia solandri is scattered around the margin of the Coral Sea. *A. solandri* subsp. *kajewskii* is confined to the New Hebrides while *A. solandri* subsp. *solandri* is found on the southern coast of Papua and is common on continental islands of the Queensland coast between about 23° and 25°S latitude. It often forms groves in sandy soil behind beaches. It has also been collected on the mainland near Proserpine and north of Mackay but is evidently less common than on the islands. A sterile specimen tentatively referred to *A. solandri* was collected on a small island near Gladstone. Mature fruits have been collected in June, July and August and flowering probably occurs in late summer.

Acacia solandri is closely related to *A. spirorbis* from New Caledonia, but confusion has occurred not with that species but with *A. julifera* and, for some unaccountable reason, with *A. shirleyi.* The Leichhardt specimen from the Boyd River mentioned by Bentham in the protologue of *A. solandri* should be referred to *A. shirleyi,* and the Brown specimen from the Cumberland Islands cited by Bentham (Fl. Aust.) under *A. julifera* is *A. solandri.*

48. *Acacia hyaloneura Pedley. **Type:** 34 km from Pentland towards Torrens Creek, Aug 1972, *Gittins* 2523 (BRI, holo).

Shrub up to 3 m tall; branchlets angular, glabrous and slightly glutinous, yellowish. Phyllodes straight, acute or obtuse mucronulate, 6–11 cm long, 6–11 mm wide, 8–14 times as long as wide, midrib raised, secondary nerves parallel, not or slightly anastomosing, hyaline, only slightly raised, 7–14 on each side of the midrib; gland small, basal; pulvinus 3–5 mm long. Spikes interrupted, 2·5–3 cm long on peduncles 4–6 mm long in pairs in upper axils; bracteoles concave, sessile, embracing flowers before expansion of spikes. Flowers 5–merous; calyx broad cylindric, 0·7 mm long with broad obtuse lobes 0·2 mm long, fimbriate, otherwise glabrous; corolla glabrous, *ca* 2 mm long, reflexed; stamens *ca* 4 mm long; ovary pubescent. Pods glabrous 6–8 cm long, 5–7 mm wide, *ca* 5 mm thick with woody valves with thickened margins, opening by rolling back elastically from the apex. Seeds longitudinal *ca* 5·5 mm long and 3 mm wide, rough surfaced; areole large open; funicle straight, stiff, slightly thickened below seed.

NORTHERN TERRITORY: 50 miles [80 km] NE of "Creswell" Stn, Jul 1948, *Perry* 1678. QUEENSLAND. BURKE DISTRICT: 32 km from Gunpowder on "Quamby" Road, Oct 1972, *Althofer* 299 (sterile). MITCHELL DISTRICT: Torrens Creek, *Young*. SOUTH KENNEDY DISTRICT: "Disney" Stn, *ca* 90 miles [145 km] N of Clermont, Jul 1964, *Pedley* 1722.

Acacia hyaloneura ranges from north of Clermont to the Great Dividing Range near Torrens Creek through north-western Queensland to the Northern Territory but it is not at all common. It occurs usually with low eucalypts on shallow rocky soil. It flowers from May to July.

In general appearance *A. hyaloneura* resembles *A. whitei* which however has raised nerves, shorter stouter spikes and much thinner pods. In venation *A. hyaloneura* resembles *A. subtilinervis* from southern coastal parts of New South Wales but this has several dense spikes on a short axillary shoots as in *A. blakei* and *A. caroleae*.

49. Acacia calyculata A. Cunn. ex Benth., London J. Bot. 1:379 (1842), Fl. Aust. 2:410 (1864); Maiden, Proc. Roy. Soc. Qd 30:46 (1918). **Type:** Fitzroy I., June $\frac{323}{1819}$, *Cunningham* (K, holo; BM, MEL iso).

A. australis Domin ex Velen., Vergleich. Morphol. Pflanz. 4 (suppl.): 175.t.79 (1913); van der Pijl, Principles of dispersal in higher plants ed. 2. p.32 (1972). **Type:** unknown.

***Acacia hyaloneura** species nova, affinis *A. subtilinervis* F. Muell. longioribus sparsifloris spicis binatim non in axe elongato in axillis differt. **Typus:** *Gittins* 2523 (BRI, holo).

Frutex usque 3 m altus; ramuli angulares glabri vel leviter glutinosi, flavidi. Phyllodia recta, acuta vel obtusa et mucronulata, 6–11 cm longa, 6–11 mm lata, 8–14–plo longiora quam lata; costa elevata; nervi secundarii paralleli (7–14 utrinque costae) nullimodo vel non nisi leviter anastomantes, hyalini, non nisi leviter elevati; glans parva basalis; pulvinus 3–5 mm longus. Spicae sparsiflorae, 2·5–3 cm longae in pedunculis binatis axillaribus vectae; bracteolae concavae sessiles ante expansionem spicarum flores amplectentes. Flores 5–meri; calyx late cylindracea 0·7 mm longa lobis latis obtusis 0·2 mm longis fimbriatis, cetera glabra; corolla glabra circa 2 mm longa reflexa; stamina circa 4 mm lata; ovarium pubescens. Legumina glabra, 6–8 cm longa, 5–7 mm lata, circa 5 mm crassa, valvis e apice elastice revolutis, ligneis marginibus incrassatis praedita. Semina longitudinalia circa 5·5 mm longa, 3 mm lata, paginis aspris; areolus magnus apertus; funiculus rectus rigens subter semine leviter incrassatus.

A. vilhelmii Domin, Biblioth. Bot. 89:266 (1926). **Type:** in xerodrymio apud Cape False, Jan 1910, *Domin* "5130" (PR, holo).

Misapplied name: *A. holcocarpa* auct. non Benth; F. Muell. Fragm. 11:69 (1880), Icon. Aust. Sp. Acac. dec 11 (1888), Linn. Soc. N.S.W. Macleay Mem. Vol. 224 (1893).

Shrub to 2·5 m tall; branchlets glabrous or scurfy, flattened. Phyllodes straight or curved, obtuse or acute when narrow, glabrous (4·5–)7–9(–13) cm long, (4–)6–12(–25) mm wide, 4–12(–16) times as long as wide; three longitudinal nerves prominent, tending to run together near lower margin at base, many fine ± parallel longitudinal secondary nerves, not anastomosing; gland basal; pulvinus 2–4 mm long. Spikes open to moderately dense, almost white, 1·5–3·5 cm long on glabrous peduncles 3–7 mm long, in pairs, rarely in 4's, at base of rudimentary axillary shoot. Flowers 5–merous; calyx densely pubescent 0·5–0·7 mm long with lobes *ca* 0·1 mm long; corolla lobed to the middle, 1·2–1·8 mm long, 2·4–2·7 times as long as the calyx; stamens 3·5–4 mm long; ovary slightly scurfy. Pod terete or slightly quadrangular, hooked at the apex, tapered to the base and opening elastically from the top, *ca* 11 cm long, 3 mm wide. Seeds longitudinal, 4·5 mm long, 1·7–2 mm wide, 1·2–2 mm thick; areole large, open; funicle straight, rather stiff, 3–4 times as long as the seed, abruptly thickened into cupular aril beneath seed.

COOK DISTRICT: 75 miles [120 km] S of Cape York, 11°47'S 142°30'E, Jun 1968, *Pedley* 2719; Stannary Hills, Jun 1962, *Gittins* 533A. NORTH KENNEDY DISTRICT: Hinchinbrook I., Aug 1975, *Sharpe* 1642 & 1667.

Acacia calyculata ranges from Cape York to about Townsville. It occurs on sands in heath-like communities near the sea and on shallow stony soils on hillsides in eucalypt communities farther inland. Some plants in flower can be found at any time of the year. The species has flattened branchlets and pale (almost white) flowers and is therefore readily identified both in the field and in the herbarium.

Pods were not described by Bentham in the protologue, but they were in Flora Australiensis. Despite Bentham's note to the contrary, the pods were mismatched and they really belong to *A. aulacocarpa*. Mueller (1880) described *A. holcocarpa* giving a number of localities and remarked that it approached *A. calyculata* which, however, had the fruit of *A. aulacocarpa*. His figure (1888) certainly represented *A. calyculata*. Mueller (1893) inferred that *A. calyculata* and *A. holcocarpa* were conspecific and that the pods attributed to *A. calyculata* were those of *A. aulacocarpa*. Maiden followed up Mueller's suggestion and formally referred *A. holcocarpa* to *A. calyculata*.

Velenovsky's account and figure (reproduced by van de Pijl) of *A. australis* apply to *A. calyculata*. I have not seen a type specimen, which was probably one of Domin's collections, but the identity of the plant is clear. Domin noted that the plant described and figured by Mueller as *A. holcocarpa* was not *A. holcocarpa* Benth. He therefore described *A. vilhelmii* as new. It is difficult to understand why he did not follow Mueller's suggestion and Maiden's synonymy and refer the species he described as new to *A. calyculata* where it belongs.

Despite the confusion between *A. calyculata* and *A. holcocarpa* begun by Mueller, *A. holcocarpa* is distinct, but conspecific with *A. julifera*.

50. Acacia aprepta Pedley, Contrib. Qd Herb. 15:5 (1974). **Type:** 10 miles E of Weengallon, Nov 1961, *Pedley* 917 (BRI, holo).

Tree up to 10 m tall with dark furrowed bark, branchlets at first angular, becoming terete, slightly scurfy. Phyllodes linear or linear-oblanceolate, ± acute, glabrous or slightly scurfy, 3·5–8·5 cm long, 2–8 mm broad, 9–20(–35) times as long as broad; 1–3 slightly prominent longitudinal nerves, the rest numerous fine parallel non-anastomosing; indistinct gland at the base; pulvinus 1–1·5 mm long. Spikes 0·6–2·5 cm long dense or sparsiflorous (when old) in pairs or single in the upper axils, with glabrous peduncles 4–5 mm long and glabrous rachis. Flowers 5–merous, calyx *ca* 0·5 mm long, truncate or shortly lobed, moderately sericeous especially on ribs, glabrescent; corolla 1·5 mm long, glabrous; ovary glabrous. Pod 2·5–6 cm long, 5–7 mm broad, with membranous glabrous valves convex over the seeds. Seeds oblique 3 mm long, 1–1·5 mm broad attached by funicle once folded towards the apex forming a small cupular aril. (Fig. 10i, pod).

MARANOA DISTRICT: "Tallwood", 28°20'S 148°55'E, Jun 1962, *Ebersohn* E62. DARLING DOWNS DISTRICT: Miles, Dec 1972, *Pedley* 4019.

Acacia aprepta (Miles mulga) is restricted to the western part of the Darling Downs and adjacent parts of Maranoa district where it forms dense pure stands (low open-forests) on shallow loamy or sandy soils overlying weathered sandstone. It is particularly common around Miles and Glenmorgan.

It bears a general resemblance to mulga (*A. aneura*) but the structure of the pod and calyx suggests a close affinity to *A. kempeana* and *A. stowardii*.

51. Acacia torulosa Benth., J. Proc. Linn. Soc. Bot. 3:139 (1859). **Syntypes:** Nicholson River, *Mueller* 26; Gulf of Carpentaria *Mueller* 24 (K).

A. armitii F. Muell. ex Maiden, J. & Proc. Roy. Soc. N.S.W. 51:84 (1917). **Type:** Einasleigh River, *Armit* 1014 (NSW, holo; MEL, iso).

Misapplied name: *A. delibrata* auct. non A. Cunn ex Benth.; F. Muell., Icon. Aust. Sp. Acacia (1888).

Tree to 8 m tall with dark longitudinally furrowed bark. Young plants clothed with moderately dense lax white hairs *ca* 0·5 mm long and stipules setaceous 2·5 mm long (cf. *A. julifera* and *A. tenuinervis*). Branchlets of mature plants yellowish, angular, glabrous but not glutinous; stipules caducous, triangular, *ca* 1 mm long. Phyllodes glabrous, straight or curved, ± acute, broadest above the middle, young tips dark, (6·5–)9–17(–20) cm long, (4–)5–9(–13) mm wide, 9–22(–35) times as long as broad; 1–3 yellow longitudinal nerves prominent and many finer but somewhat prominent secondary longitudinal nerves, not anastomosing; gland basal; pulvinus 3–4 mm long. Spikes dense, 1·5–3 cm long on slightly scurfy, sometimes glutinous, peduncles 1–5(–7) mm long in pairs or rarely single on a rudimentary axillary shoot sometimes growing out, in one case 2·5 cm long with 7 peduncles. Flowers 5–merous; calyx 0·6–0·8 mm long, rather membranous, deeply lobed, with a few long hairs; corolla 1·1–1·3 mm long, 1·5–2 times as long as the calyx with lobes 0·3–0·5 mm long, glabrous or with a few long hairs in the middle of the lobes; stamens 2–3 mm long; ovary densely pubescent. Pod torulose, glabrous, to 10 cm long, 4 mm wide (1·5 mm wide at constrictions), longitudinally wrinkled. Seeds longitudinal, 5 mm long, *ca* 3 mm wide, thick; areole rather large, open, surrounded by pale halo; funicle thickened but hardly at all folded.

BURKE DISTRICT: Nicholson River, 50 miles [80 km] N of "Lawn Hill" Stn, Jun 1948, *Perry* 1147. COOK DISTRICT: *ca* 25 miles [40 km] NNW of Coen, Jul 1968, *Pedley* 2764. NORTH KENNEDY DISTRICT: 6 miles [10 km] W of Pentland, Jun 1953, *Lazarides* 3577. MITCHELL DISTRICT: 12 miles [20 km] from Torrens Creek on Pentland Road, Jun 1966, *Pedley* 2118. SOUTH KENNEDY DISTRICT: Cape River *ca* 70 miles [115 km] S of Charters Towers, May 1960, *Johnson* 1877.

Acacia torulosa has a wide range in northern Australia. In Queensland it extends from the extreme north-western part of the state to the Cape York Peninsula and the Pentland-Lake Buchanan area, but is not found on the Atherton Tableland. It occurs on deep sandy soils, often on river beds and levees but also occurs on sandy red and yellow earths. It flowers in June and July, possibly a little earlier in the south-eastern part of its range and fruits from August to October.

The pods of *A. torulosa* are so distinctive that fruiting specimens are rarely misidentified. Specimens without pods are often confused with *A. hammondii* and *A. julifera* however.

A. armitii and *A. torulosa* are conspecific. Maiden described the plant illustrated under the name *A. delibrata* by Mueller as a new species, *A. armitii*. In the protologue he pointed out that the illustration was inaccurate in that the pods were extremely immature. I have examined the rather fragmentary specimen at NSW and the more copious material at MEL. The extremely immature pods are dark brown and glutinous with a yellowish margin and are difficult to assign to any species with certainty but *A. armitii* should be referred to *A. torulosa*.

52. Acacia hemsleyi Maiden, J. & Proc. Roy. Soc. N.S.W. 51:87 (1917). **Type:** Fitzroy River, 8 miles above Hann River junction, Jun 1905, *Fitzgerald* 1177 (NSW, holo).

Open shrub to 6 m tall; branchlets slender, angular, glabrous and somewhat glutinous; stipules triangular, brown, persistent. Phyllodes straight, lanceolate, mucronulate, the mucro somewhat oblique, up to 2 mm long on young phyllodes, glabrous, (6–)7–11 cm long, 4–8(–10) mm wide, 8–17(–21) times as long as wide, two or occasionally one nerve prominent, the rest ± crowded, not anastomosing; gland basal, a prominent rimmed orifice, sometimes elongated; pulvinus *ca* 1 mm long. Spikes dense, 1·5–2·5 cm long, usually with 1–2 isolated flowers on peduncle below the main spike, on peduncles 6–12 mm long, in pairs in the axils, occasionally in axillary panicles of up to 5 spikes. Flowers 5–merous; calyx membranous, 0·7–0·9 mm long, glabrous except for scattered marginal hairs up to 0·3 mm long, lobes *ca* 0·5 mm long; corolla glabrous, deeply lobed, 1–1·3 mm long, 1·4–1·6 times as long as the calyx; stamens 2·5–3 mm long; ovary densely pubescent. Pods glabrous, slightly glutinous, flat but convex over the seeds, 7–10 cm long, *ca* 4 mm wide. Seeds longitudinal, 4·5–5·5 mm long, 2·5–3·2 mm wide; areole sharply defined, small, central, closed, surrounded by pale halo; funicle forming oblique basal aril.

BURKE DISTRICT: Leichhardt River, Mt Isa, Oct 1962, *Pedley* 1064. COOK DISTRICT: 36 miles [58 km] S of Forsayth, Jul 1953, *Perry & Lazarides* 3864. NORTH KENNEDY DISTRICT: Lower Burdekin River, Ayr, *Michael* 1626.

In Queensland *A. hemsleyi,* which extends into the Northern Territory and the northern part of Western Australia, is confined to gravelly sands in stream beds and on banks. It is specially common in the north-western part of the State but has also been recorded near Forsayth and on the Burdekin and other streams near Ayr.

A. hemsleyi is related to *A. plectocarpa* A. Cunn. ex Benth.* and to *A. kimberleyensis* W. Fitzg. which may, in fact, be merely a narrow-phylloded variant of *A. plectocarpa*. *A. cognata* Maiden & Blakely is also related to these two but has larger calyxes only shortly lobed. *A. plectocarpa* differs from *A. hemsleyi* in having pubescent calyxes and rachises, short peduncles and transverse seeds.

53. Acacia julifera Benth., London J. Bot. 1:374 (1842), Fl. Aust. 2:405 (1864); Pedley, Proc. Roy. Soc. Qd 74:54 (1964). **Type:** Rodds Bay, May $\frac{325}{1819}$, *Cunningham* (K, holo).

A. holocarpa Benth., Fl. Aust. 2:408 (1864). **Type:** East Coast Entrance I., Port II. Inner entrance of Thirsty Sound, *Brown* (K, holo; BM, E, iso).

Tree to about 10 m tall with dark fibrous bark; branchlets yellow, slender, angular becoming ± terete. Branchlets and phyllodes of young plants pubescent, the indumentum persisting on mature plants of subsp. *gilbertensis,* rarely of subsp. *julifera*. Phyllodes falcate, 7–25 cm long, 5–25 mm wide, 4–20 times as long as wide, obovate and pubescent on young plants, lanceolate and usually glabrous (subsp. *julifera*) or pubescent (subsp. *gilbertensis*) on mature plants; many parallel, non-anastomosing longitudinal nerves, 3, or rarely 5, more prominent than the rest, neither decurrent with each other nor with margin at the base; gland basal, inconspicuous; pulvinus 2–3 mm long. Spikes usually dense, 3–5 cm long on usually pubescent peduncles 2–5 mm long usually in pairs or rarely 3's on a short axillary axis which sometimes grows out in to a leafy shoot. Flowers 5–merous; calyx 0·8–1·5(–2) mm long, lobed to about the middle, the lobes obtuse with short brown hairs at the top, the tube tomentose; corolla 1·6–2·4 mm long, 1·5–2 times as long as the calyx; stamens *ca* 3 mm long; ovary pubescent. Pod terete or slightly flattened, obscurely longitudinally striate when dry, 5–9 cm long, 2–5 mm diam. Seeds longitudinal, 3–4 mm long, 1·5–3·5 mm wide, with a small narrow open areole surrounded by a pale halo and with a second indistinct pleurogram outside; funicle folded 4–5 times forming an oblique cupular aril beneath the seed.

53a. A. julifera subsp. **julifera**

Phyllodes of mature plants glabrous or subglabrous, usually 4–12 times as long as wide; spikes 3–5 cm long. Pods terete up to 3 mm diam; seeds up to 4 mm × 2 mm. (Fig. 10f, pod).

NORTH KENNEDY DISTRICT: Gardner Creek, 33 miles [53 km] NE of Pentland, Jun 1966, *Pedley* 2123. LEICHHARDT DISTRICT: Nebo–Clermont Road *ca* 40 miles [65 km] from Nebo, May 1962, *Johnson* 2376. PORT CURTIS DISTRICT: West Mt Morgan, Jul 1938, *Goy* 321. DARLING DOWNS DISTRICT: 20 km NW of Miles, Dec 1972, *Pedley* 4021. BURNETT DISTRICT: Eidsvold, *Bancroft*. WIDE BAY DISTRICT: between Wallaville and Booyal, Jun 1962, *Pedley* 1020. MORETON DISTRICT: Blackstone, 8 km SE of Ipswich, May, Dec, Oct 1959, *Pedley* 410, 489, 540.

***Lectotype:** Cambridge Gulf, Sep $\frac{482}{1819}$, *Cunningham* (K).

53b. *A. julifera subsp. **gilbertensis** Pedley. **Type:** Burke District: "Esmeralda" Stn 18°51′S 142°35′E, Jul 1954, *Blake* 19655 (BRI, holo; A, CANB, K, L, LE, PR, iso).

Phyllodes of mature plants with indumentum of moderately dense hairs; phyllodes usually 12–20 times as long as wide; spikes 2–3 cm long. Pods subterete to 5 mm diam.; seeds to 5·5 mm × 3·5 mm.

BURKE DISTRICT: Croydon, Jul 1954, *Blake* 19561. COOK DISTRICT: between "Strathmore" and "Gilbert River" Stn, Jun 1966, *Pedley* 2108; 12 miles [19 km] S of Georgetown, Jun 1966, *Pedley* 2109; 17 miles [27 km] E of Chillagoe, Jun 1955, *Tracey & White* 5355. NORTH KENNEDY DISTRICT: 131 km from Hughenden on Herberton road, Oct 1972, *Althofer* 250.

Acacia julifera extends from the south-east part of the Gulf of Carpentaria through coastal and subcoastal districts to the Clarence River in New South Wales. *A. julifera* subsp. *gilbertensis* is confined to the upper catchments of the Norman, Gilbert and Mitchell Rivers where it usually occurs on seasonally waterlogged sandy soils with *Melaleuca* spp. It is replaced about Pentland by subsp. *julifera* which has a wider geographical and ecological range. It usually occurs on well drained sandy soils behind coastal dunes or on weathered or unweathered sandstones.

Herbarium material of *A. julifera* (especially subsp. *julifera*) may be at times difficult to separate from that of *A. blakei*. *A. julifera* has terete pods and densely pubescent juvenile phyllodes but these characters are often not of great value when working with herbarium material, though the pubescence of young plants is an extremely useful character in the field. Spikes of *A. blakei* are always borne on an axillary axis while in *A. julifera* the axis is generally not well developed. This character is of some value in separating the two species. Intermediates between *A. julifera* and *A. curvinervia* are known from central Queensland, but in general the two are well defined and should be regarded as distinct species.

As I have indicated (1964) *A. julifera* has been, for reasons I cannot appreciate, the source of considerable confusion. The confusion stems from Bentham's (1864) treatment of it and related species. In addition to the type specimen Bentham referred three specimens (all in fruit) to *A. julifera* which he had described from flowering material. Two of them (Cumberland Islands, *Brown;* Edgecombe Bay, *Dallachy;* both K) are *A. solandri* which he, on the very same page described as a new species. The other specimen (Rockingham Bay, *Hill*) is *A. cincinnata*. Bentham added to the confusion by also describing *A. holcocarpa* as new. The phyllodes of the type of *A. holcocarpa* which bears pods are slightly broader than those of the type of *A. julifera* but the two species are undoubtedly the same. Mueller in the long and perceptive protologue to *A. maidenii* suggested that the Edgecombe Bay specimen cited by Bentham might not be *A. julifera*. Maiden (Proc. Roy. Soc. Qd 30:41. 1918), however, continued to confuse *A. solandri* and *A. julifera*. He added another name to the muddle when in its protologue he referred four specimens from northern Queensland to *A. difficilis*. I have examined two

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***Acacia julifera** Benth. subsp. **gilbertensis** Pedley, subsp. nov.

Phyllodia plantarum maturarum pilis modice densis obtecta, plerumque 12–20–plo longiora quam lata; spicae 2–3 cm longae. Legumina subteretia usque 5 mm diam.; semina usque 5·5 × 3·5 mm. **Typus:** *Blake* 19655 (BRI, holo; A, CANB, K, L, LE, PR, iso).

of these specimens (*Cambage* 3918 & 4107, both NSW) and refer them unhesitatingly to *A. julifera* subsp. *gilbertensis*. At about the same time Maiden (in a letter to C. T. White) identified specimens of *A. julifera* of White from Ipswich and Bancroft from Eidsvold as *A. difficilis*. Consequently *A. julifera* has often been misidentified in Queensland as *A. difficilis*.

54. Acacia latifolia Benth., London J. Bot. 1:382 (1842). **Type:** Carpentaria Islands h-g, 16-25 Dec 1802, *Brown* "4378" (BM, holo; K, iso).

Shrub to 3 m; branchlets ± winged, glabrous and sometimes glaucous. Phyllodes sessile, rather broad at the base, ± ovate, obtuse, the lower margin ± straight, the upper curved, glabrous and often glaucous, 8–11 cm long, 2·5–4·5 cm wide, 2–4·5 times as long as wide; 3–4 longitudinal nerves prominent with conspicuous nerves running from the major nerves, finely anastomosing; gland basal. Spikes moderately dense, *ca* 5 cm long on peduncles 3–5 cm long in pairs in the upper axils. Flowers 5–merous; calyx truncate, glabrous, *ca* 0·5 mm long; corolla *ca* 2·5 mm long; stamens *ca* 4 mm long; ovary glabrous. Pods flat, glabrous, up to 12 cm long and *ca* 6 mm wide. Seeds longitudinal, 5 mm long, 3–3·5 mm wide; areole large, open; funicle folded and expanded into cupular aril.

BURKE DISTRICT: "Corinda"—"Westmoreland" Stn, *ca* 17°40'S 138°30'E, Jun 1967, *Gittins* 1291.

Acacia latifolia occurs on shallow stony soils and flowers in June and July. It is a rare plant in Queensland having been collected only twice, from the extreme north-west of the state.

The species has some unusual characters, notably the winged stems and sessile phyllodes, the large corollas and spikes with extremely long peduncles. Its affinities are obscure.

55. Acacia cretata Pedley, Contrib. Qd Herb. 4:1 (1969). **Type:** 25 miles [40 km] NE of Capella, Jul 1962, *Story & Yapp* 182 (BRI, holo).

Tree to about 8 m tall; branchlets stout, angular with a covering of white chalky bloom, occasionally almost absent. Phyllodes glabrous glaucous, slightly falcate, 7–13 cm long, 10–35 mm wide, (2·5–)3·5–7·5 times as long as wide abruptly narrowed into pulvinus 2–3 mm long; 2 or 3 longitudinal nerves more prominent than the rest, free to the base, secondary longitudinal nerves widely spaced (15–25/cm) strongly anastomosing; gland small, basal. Spikes moderately dense to open, 7·5–10 cm long on glaucous peduncles 1–2 cm long. Flowers 5–merous; calyx glabrous truncate or with extremely short teeth, 0·5–0·6 mm long; corolla glabrous, 1·6–1·8 mm long, *ca* 3 times as long as the calyx; stamens 3–4 mm long; ovary pubescent. Pod glabrous, linear ± straight convex over seeds and somewhat contracted between them, up to 10 cm long, 3·5 mm wide. Seeds longitudinal.

LEICHHARDT DISTRICT: Blacktown Tableland, 23°45'S 149°10'E, *Williams* 365; 6 km±W of Dingo, Aug 1973, *Pedley* 4089.

Acacia cretata has a limited range in central Queensland. It is common on Blackdown Tableland and extends sporadically about 100 km to the north and south. The species was recorded in the protologue from Jericho (*Clemens*). This must be considered doubtful as intensive collecting in the last few years has failed to confirm it. It usually forms a low-tree layer in eucalypt open-forest on sandy soils. Flowering extends from mid-July to September.

The strongly pruinose branchlets and glaucous phyllodes contracted abruptly into a short pulvinus distinguishes *A. cretata* from all other species of *Acacia,* with the possible exception of *A. latifolia,* but the widely spaced, strongly anastomosing secondary nerves suggest a relationship with *A. tropica* and *A. leptocarpa.* A specimen (Duaringa, *Pedley* 4088) which has been referred to *A. leptocarpa* has rather glaucous phyllodes smaller and less falcate and with more strongly anastomosing secondary nerves than is usual in *A. leptocarpa.* It may indicate that intergrades between *A. cretata* and *A. leptocarpa* occur.

In the protologue the ovary was described as being glabrous. This is true only when the ovary is aborted. It is usually pubescent.

56. Acacia sophorae (Labill.) R.Br. in Ait., Hort. Kew ed. 2. 5:462 (1813). Based on *Mimosa sophorae* Labill., Pl. Nov. Holl. 2:87.t.237 (1806). **Type:** Nouv. Holl. Hebrier de Ventenat (K, photo).

Acacia longifolia (Andr.) Willd. var. *sophorae* (Labill.) F. Muell., Pl. Vict. 2:30 (1863). Based on *Mimosa sophorae* Labill.

A shrub often prostrate especially in exposed situations, glabrous or with some scattered hairs; branchlets angular, soon becoming terete. Phyllodes elliptic or oblong-elliptic, obtuse, 5–10 cm long, 1–2 cm wide, 3–6 times as long as wide; 2, 3 or 5 more or less prominent longitudinal nerves with secondary longitudinal, usually reticulate, nerves between them, not as conspicuous as in related species; gland *ca* 2 mm from the base; pulvinus 3 mm long. Spikes subsessile rather dense, 2–3 cm long, rachis glabrous. Flowers 4–merous; calyx *ca* 0·6 mm long with short obtuse ciliolate lobes; corolla *ca* 2 mm long, deeply divided, glabrous; stamens *ca* 3 mm long; ovary densely pubescent. Pod linear, curved and twisted, *ca* 8 cm long, 4 mm wide, convex over the seeds; seeds longitudinal, *ca* 5 mm long, 3·5 mm wide and 2 mm thick; areole large, open; funicle folded, thick and fleshy, forming basal aril about as long as the seed.

MORETON DISTRICT: Caloundra, Aug 1906 & Sep 1912, *Kenny.*

Acacia sophorae which is widely spread along sandy sea shores in south-eastern Australia ranges as far north only as far as the mouth of the Maroochy River in Queensland. It is found only on coastal dunes and flowers from July to September.

A. sophorae is closely related to *A. longifolia* which does not occur in Queensland, but appears to be specifically distinct from that species.

57. Acacia obtusifolia A. Cunn. in Field, Geogr. Mem. N.S.W. 345 (Apr 1825); Willis, Victorian Naturalist 73:159 (1957). **Type:** Blue Mtns, Dec $\frac{223}{1822}$, *Cunningham* (K, holo).

A. intertexta Sieb. ex DC., Prodr. 2:454 (Nov. 1825). **Type:** *Sieber* 453 (G-DC, holo; K, iso)

A tree to 10 m tall, glabrous; branchlets terete. Phyllodes coriaceous, oblong lanceolate or oblong, 8–19 cm long, 8–22 mm wide, 4–20 times as long as wide; 1–5 or more prominent longitudinal veins, secondary veins between them reticulate; gland up to 1 mm from the base; pulvinus 2–3 mm long. Spikes interrupted, *ca* 5 cm long on peduncles *ca* 5 mm long. Flowers large, 4–merous; calyx 0·4–0·7 mm long, the tube glabrous, lobes ciliolate *ca* ¼ as long as tube; corolla *ca* 2·5 mm long, the lobes prominently keeled near the top; stamens 4–5 mm long; ovary pubescent. Pods linear, subterete with prominent margins,

up to 15 cm long; 3·5–5 mm wide. Seeds longitudinal, *ca* 5 mm long and 2·5 mm wide; areole large, open; funicle folded *ca* 5 times into aril embracing base of seed.

MORETON DISTRICT: Tugun, Sep 1930, *Hubbard* 3906 & *White* 7112; Springbrook, Oct 1931, *White* 8219.

Acacia obtusifolia occurs in eucalypt open-forest and on the margins of rainforest in wet elevated parts of south-eastern Queensland such as Springbrook and the Lamington National Park but it extends to drier peaks such as Flinders Peak and Mt Greville. The main period of flowering appears to be October-January. Specimens from Southport and Tugun, *Hubbard* 3906 and *White* 7112 & 9196 have broader more membranous phyllodes than specimens from other places and may indicate hybridization between *A. obtusifolia* and *A. sophorae,* species that are closely related.

58. Acacia longissima H. Wendl., Comm. Acac. 45.t.11 (Jan 1820). **Type:** not seen.

A. linearis Sims, Bot. Mag. t.2156 (Jun 1820). **Type:** not seen, possibly plate.

A. longifolia (Andr.) Willd. var. *linearis* (Sims) F. Muell., Pl. Vict. 2:31 (1863). Based on *A. linearis* Sims.

Slender shrub or small tree to 5 m, glabrous; branchlets angular, all but the smallest with conspicuous lenticels as in *A. maidenii.* Phyllodes chartaceous, punctate, straight, linear or linear-lanceolate, 6–16 cm long, 1–9 mm wide, 14–70 times as long as wide, midnerve prominent, with 1–3 other, less conspicuous, anastomosing nerves on each side of it; gland absent; pulvinus *ca* 1 mm long. Spikes interrupted, 5 cm long on peduncles 5–10 m long. Flowers 4–merous; calyx with small obtuse ciliolate lobes, *ca* 0·4 mm long; calyx 1·4–1·6 mm long, glabrous; stamens 2–3 mm long, ovary pubescent. Pods ± terete, longitudinally striate, raised over the seeds, straight or curved, up to 12 cm long, 2 mm wide. Seeds longitudinal, *ca* 4·5 mm long and 1·5 mm wide; areole large, open; funicle thickened and folded *ca* 6 times forming basal aril about ¼ as long as seed.

WIDE BAY DISTRICT: slopes of Mt Cooroy, *White.* MORETON DISTRICT: between Palmwoods and Landsborough, Jul 1930, *Hubbard* 3425.

Acacia longissima occurs in shrubby eucalypt open-forest in areas of high rainfall south of about Gympie. It favours fertile soils and flowers mainly from January to April.

Plants of *A. longissima* may be confused with juvenile *A. maidenii* which also have narrow phyllodes, but it can usually be distinguished from other members of the Tetramerae group by its narrow, rather membranous phyllodes.

59. Acacia maidenii F. Muell., Linn. Soc. N.S.W. Macleay Mem. Vol. 222 (1893); Maiden, For. Fl. N.S.W. 6:199 (1917). **Type:** Kuruah River, in 1892, *Bäuerlen* (K, iso).

Tree to about 15 m tall with branchlets angular, soon becoming terete, prominent lenticels always present, sometimes pubescent when young the pubescence extending to the phyllodes. Phyllodes, straight or falcate, 10–20 cm long, 10–25 mm wide, 5–16 times as long as wide, but phyllodes on young plants up to 25 cm long and only 3 mm wide; 1–5 nerves with many* (10–22) closely packed

*There is a highly significant relationship between the number of longitudinal nerves (N) and the width of the phyllodes (B, expressed in cm). This is given by the equation $N = 3B + 2·6$.

anastomosing nerves between the major ones; gland obscure, depressed, about 5 mm from the base. Spikes subsessile single or in pairs in the upper axils, interrupted, up to 6 cm long, rachis sparsely to densely golden pubescent. Flowers 4(–5)–merous; calyx cupular, obtusely lobed, 0·4–0·5 mm long, densely pubescent; corolla glabrous, *ca* 1·5 mm long; ovary pubescent. Pod turgid, subterete, twisted (sometimes in irregular loose spirals), with sparse appressed pubescence, longitudinally wrinkled, 10–12 cm long, 3·5–4 mm wide; seeds longitudinal, 4·5–5 mm long, 2·5–3 mm broad with a large oblong open areole; funicle folded and thickened into cupular aril.

NORTH KENNEDY DISTRICT: Strathdickie, near Proserpine, *Michael* 840. PORT CURTIS DISTRICT: Byfield, Sep 1931, *White* 8030. DARLING DOWNS DISTRICT: near Pittsworth, Dec 1969, *Pedley* 3065. BURNETT DISTRICT: Biggenden, Oct 1930, *White* 7300. WIDE BAY DISTRICT: Bingera, Oct 1948, *Smith* 4112. MORETON DISTRICT: Albert River, Aug. 1930, *Hubbard* 3818.

Acacia maidenii occurs in coastal and subcoastal districts usually on reasonably fertile well drained soils. Its northern limit is about Proserpine but it is not common north of about Bundaberg. Flowering occurs from January to May and individual trees may flower for months. Fruits mature from September to December.

Mueller placed the species in the subseries *Falcatae* but Maiden pointed out its close relationship to *A. longifolia* and *A. floribunda* in the subseries *Tetramerae*. Young plants of *A. maidenii* have narrow phyllodes resembling those of *A. floribunda* and *A. longissima*.

60. Acacia floribunda (Vent.) Willd., Spec. Plant. 4:1051 (1806). Based on *Mimosa floribunda* Vent., Choix des Plants t.13 (1803). **Type:** not seen—possibly plate.

Acacia longifolia (Andr.) Willd. var. *floribunda* (Vent.) F. Muell., Pl. Vict. 2:31 (1863). Based on *Mimosa floribunda* Vent.

Tree to about 8 m; branchlets angular, with short white appressed hairs, lenticels sometimes present. Phyllodes straight, narrow lanceolate acute, 5–10 cm long, (2–)4–10 mm wide, 8–18(–35) times as long as wide, appressed pubescent when young; 1–3 longitudinal nerves prominent, secondary nerves, usually 6–9 on each side of midrib, anastomosing; gland not prominent, if present then 4–6 mm from the base. Spikes ± sessile, to about 8 cm long, sparsiflorous, rachis glabrate. Flowers 4–merous; calyx cupular, ± glabrous, 0·2–0·5 mm long, the lobes short, obtuse, sometimes ciliate; corolla 1·4–2 mm long, 3–7 times as long as the calyx; ovary pubescent with long white hairs. Pod with a few appressed hairs, straight linear, *ca* 13 cm long and 3 mm wide, longitudinally wrinkled and somewhat moniliform. Seeds longitudinal, 4–5 mm long, *ca* 1·5 mm wide; areole large, open; funicle folded.

DARLING DOWNS DISTRICT: N of Ballandean, Oct 1958, *Pedley* 319. MORETON DISTRICT: Tamborine Mt, Sep 1932, *White* 8663.

Acacia floribunda is found in Queensland only near Stanthorpe, where it is best developed on sands along creeks. It has also been collected at Tamborine Mt and a very narrow-phylloded specimen from Mt Barney. It flowers in September and October.

The species is closely related to *A. maidenii* but has narrower phyllodes and pods. The ranges of the two species are distinct in Queensland but they may be sympatric in the North Coast district of New South Wales.

61. Acacia orites Pedley, Proc. Roy. Soc. Qd 75:32 (1964), Contrib. Qd Herb. 4:3 (1968). **Type:** New South Wales: Peach Mountain, Whian Whian State Forest, Aug 1963, *Jones* (BRI, holo).

Tree 30 m tall; branchlets glabrous or with sparse appressed hairs. Phyllodes glabrous, straight or slightly falcate, 10–20 cm long, 4–7 mm wide, 15–35 times as long as wide, with 6–9 widely spaced anastomosing secondary nerves on each side of the midrib; gland *ca* 5 mm from the base; pulvinus short. Spikes rather open, 3–6 cm long on peduncles *ca* 3 mm long usually in pairs in the upper axils. Flowers 4–merous; calyx hirsute 0·5 mm long with short obtuse lobes; corolla glabrous, 1·5–2 mm long; stamens *ca* 3 mm long; ovary sparsely hirsute. Pods straight linear, 8–11 cm long, 4 mm wide, raised over the seeds, glabrous. Seeds longitudinal 3·5–4 mm long, 1·7–2 mm wide; areole large, open, not conspicuous; funicle thick, folded once or twice, forming basal aril.

MORETON DISTRICT: Springbrook, Aug 1931, *White* 7045.

Acacia orites is restricted to the margin of rainforest in a small area of high rainfall in north-eastern New South Wales and south-eastern Queensland. It is a large tree which sometimes provides millable logs. It flowers in August and September and fruit mature in November.

A. orites has the most restricted range of the Tetramerae group of the section *Juliflorae*. It is most closely related to *A. floribunda*.

62. Acacia argyraea Tindale, Contrib. N.S.W. Nat. Herb. 4:141 (1970). **Type:** Western Australia: Nicholson Station, Jul 1967, *Gittins* 1393 (NSW, holo).

Shrub to *ca* 1·5 m; branchlets angular, densely silvery pubescent. Phyllodes ± oblong apiculate, densely silvery pubescent with anastomosing longitudinal nerves, 3–6 more prominent than the rest but all obscured to some extent by the indumentum, 6–8 cm long, 2–3 cm wide, 2–3 times as long as wide; gland small, basal; pulvinus *ca* 1 mm long. Spikes dense 2–2·5 cm long, the bracteoles projecting beyond the flowers before they open, on densely pubescent peduncles 1·5–2 cm long in pairs in the axils. Flowers 5–merous; calyx 1–1·5 mm long broadly cupular obtusely lobed, densely pubescent on tube and lobes; corolla also pubescent, 1·5–2 mm long, *ca* 1·5 times as long as the calyx; stamens *ca* 2·5 mm long; ovary villose. Pod 6–8 cm long, *ca* 1 cm wide, broadest near the top and tapering to the base, the valves coiling back from the top when dehiscing, softly pubescent. Seeds obliquely arranged, not seen when mature; funicle straight expanding into cupular aril beneath seed.

BURKE DISTRICT: between Turn-off Lagoon and Woologorang, May 1940, *Jensen* 31.

I have seen only one specimen from Queensland. The species appears to flower irregularly. I have seen flowering specimens collected from May to July and one collected in January with both flowers and slightly immature pods. The species is related to *A. limbata* and *A. brevifolia*.

63. Acacia brevifolia (F. Muell. ex Benth.) Benth., Fl. Aust. 2:395 (1864). Based on *A. aulacocarpa* A. Cunn. ex Benth. var. *brevifolia* F. Muell. ex Benth., J. Proc. Linn. Soc. Bot. 3:144 (1859). **Type:** Suttor, *Mueller* 39 (K, holo).

A. leptophleba F. Muell. var *brevifolia* F. Muell., loc. cit., *pro syn.*

Shrub to about 1 m tall with angular glabrous and glaucous branchlets. Phyllodes ± oblong obtuse or slightly retuse, apiculate, glabrous with rather widely spaced anastomosing secondary nerves, 3–6 more prominent than the rest, 4·5–6(–7·5) cm long, 13–26 mm wide, 2–4 times as long as wide; gland basal; pulvinus *ca* 1 mm long. Spike rather dense, 1–2 cm long on glaucous peduncles 1–2 cm long in pairs in the axils. Flowers 5–merous; calyx rather broadly cupular, glabrous 0·5–0·6(–0·8) mm long with short broad lobes sometimes fringed with a few hairs; corolla glabrous 1·7–2 mm long, 3–4 times as long as the calyx; stamens *ca* 3 mm long; ovary glabrous. Pods 4–5 cm long *ca* 1 cm wide, broadest near the top and tapering to the base, the valves obliquely nerved with prominent margins, turning back elastically from the top when mature. (Fig. 9h, inflorescence).

COOK DISTRICT: Newcastle Range, between Forsayth and Einasleigh, Feb 1928, *Brass* 1743. NORTH KENNEDY DISTRICT: between Warrigal and Burra, Oct 1938, *Blake* 9930. SOUTH KENNEDY DISTRICT: 10 miles [16 km] SE of "Twin Hills", May 1964, *Pedley* 1711.

Acacia brevifolia occurs usually on shallow stony soils in subcoastal districts from north of Clermont to the Newcastle range. It appears to flower irregularly throughout the year.

In the field *A. brevifolia* and *A. umbellata* can be confused, but the nearest relative of *A. brevifolia* is *A. limbata.* The two may not be more than subspecifically distinct.

Mueller considered *A. brevifolia* to be a variety of *A. leptophleba.* Bentham, however, edited Mueller's paper and published the name *Acacia aulacocarpa* var. *brevifolia* with the name *A. leptophleba* var. *brevifolia* as a synonym. The author of the varietal epithet *brevifolia* should therefore be cited as F. Muell. ex Benth. rather than merely F. Muell. as has usually been the case.

64. Acacia limbata F. Muell., J. Proc. Linn. Soc. Bot. 3:145 (1859); Tindale, Contrib. N.S.W. Nat. Herb. 4:142 (1970). **Lectotype:** North Australia, *Mueller* (K; MEL, NSW, iso: selection made by Tindale).

Shrub to about 1 m tall with angular glaucous branchlets. Phyllodes ± oblong glabrous with widely spaced (10–16/cm) anastomosing nerves, 3 or 5 more prominent than the rest, 5–8 cm long, 12–25 mm wide, 3·3–4·5 times as long as wide; gland small, basal; pulvinus *ca* 1 mm long. Spikes rather dense (1·2–)1·5–2 cm long on glaucous peduncles 1·5–3 cm long in pairs in the axils. Flowers 5–merous; calyx glabrous cupular 0·5–0·6 mm long broadly and shallowly lobed; corolla glabrous, 1·2–1·3 mm long, about twice as long as the calyx; stamens *ca* 2·5 mm long; ovary glabrous. Pods to *ca* 6·5 cm long, *ca* 1 cm wide, broadest near the top and tapering to the base, the valves opening elastically from the top; valves rather woody, glaucous, obliquely nerved with prominent margins. Seeds *ca* 7 mm × 3 mm, oblique; areole elongate closed or only very slightly open; funicle fragile, straight, expanded into cupular aril beneath seed.

BURKE DISTRICT: between Turn-off Lagoon and Woologorang, May 1940, *Jensen* 32; 10 km from Gunpowder on Quamby Road, Oct 1972, *Althofer* 276.

Acacia limbata occurs on stony soils in the extreme north-western part of the state and in adjoining parts of the Northern Territory. Its main flowering period is from May to July.

Tindale pointed out the relationship between *A. limbata* and *A. argyraea.* In Queensland *A. limbata* has been confused with *A. brevifolia* and the two are difficult to separate. The phyllodes of *A. limbata* are somewhat larger and the flowers slightly smaller. The geographic ranges of the two are different but this is not considered to be of taxonomic value.

The description of *A. limbata* above does not cover two specimens* at BRI which may represent an undescribed taxon. They have phyllodes 9–12 cm long, 1·8–3 cm wide, 3·5–5 times as long as wide, which have a rather prominent basal gland and a pulvinus 4–6 mm long. The peduncles are only 5–10 mm long, shorter than those of either *A. brevifolia* or *A. limbata.*

65. Acacia cincinnata F. Muell., Fragm. 11:235 (1878). **Syntypes:** Gould I. and Rockingham Bay, *Dallachy* (MEL).

Small tree; branchlets angular and ribbed with appressed golden pubescence (hairs *ca* 0·25 mm long) wearing off on ribs; young shoots golden pubescent. Phyllodes with scattered appressed hairs, becoming glabrous, 11–16 cm long, 1·6–3 cm wide, 4–8 times as long as wide; three prominent longitudinal nerves running into each other on lower margin at the base, secondary nerves rather widely spaced (2–4/mm), anastomosing (probably no more than in some taxa of the *A. concurrens-A. leiocalyx* group, and less so than in *A. mangium*); gland basal, prominent swelling and rather large orifice; pulvinus 6–8 mm long. Spikes interrupted, *ca* 3·5 cm long on peduncles *ca* 0·5 cm long in pairs in the upper axils; peduncles and rachises with golden hairs. Flowers 5–merous; calyx densely pubescent, *ca* 0·6 mm long with membranous obtuse lobes *ca* 0·2 mm long; corolla 1·4–1·8 mm long, glabrous, deeply lobed; stamens *ca* 2·5 mm long; ovary densely hairy, glabrous when rudimentary. Pod linear, tightly coiled in about 5 coils, the coils fused. Seeds longitudinal, 3·6 mm long, *ca* 2 mm wide; areole large, open; funicle rather fine, encircling the seed. (Fig. 10c, pod).

COOK DISTRICT: Kuranda, May 1952, *Everist* 5142. WIDE BAY DISTRICT: mainland opposite S end of Fraser I., Jan 1928, *Kajewski* 28. MORETON DISTRICT: *ca* 5 km WSW of Burleigh Heads, 28°06'S 153°25'E, Nov 1973, *Durrington & Lebler* 1386.

There are some puzzling aspects of the distribution and ecology of *A. cincinnata.* On the wetter parts of the Atherton Tableland and adjacent coastal areas it is found on the margin of rain forest. There is a gap in the range of the species of about 1000 km from near Ingham to a little south of Maryborough. In southern Queensland *A. cincinnata* has been collected in areas of high rainfall close to the sea, but in eucalypt open-forest not on rainforest margins. It is evidently a rare or over-looked species as few specimens have been added to the Queensland Herbarium since 1930. The large gap in the range of the species may be a real one, but it should be looked for around Mackay where the annual rainfall exceeds 1200 mm. Flowering specimens have been collected in May and June and fruiting ones from October to April.

Bentham referred a specimen of *A. cincinnata* (Rockingham Bay, *Hill*) to *A. julifera,* but its nearest relative is probably *A. solandri,* fruiting specimens of which Bentham also referred to *A. julifera.*

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*BURKE DISTRICT: 25 miles [40 km] W of "Gregory Downs", Jun 1966, *Pedley* 2059; "Riversleigh" or "Thorntonia" holdings *ca* 200 km SSW of Burketown, Jun 1963, *Gittins* 799.

66. Acacia stipuligera F. Muell., J. Proc. Linn. Soc. Bot. 3:144 (1859). **Syntypes:** Victoria River, Hookers Creek and Sturts Creek, *Mueller* (MEL).

A. stipuligera var. *glabriflora* Maiden & Blakely, Proc. Roy. Soc. Qd 38:120 (1927). **Type:** Jericho, *Deane* 212 (not seen).

A medium shrub; branchlets ribbed, sparsely pubescent with hairs 0·2 mm long; young tips reddish; stipules broadly triangular, persistent, 1 mm long. Phyllodes pale yellowish green, elliptic acute, 4·5–6 cm long, 1–1·7 cm wide, 3–5 times as long as wide; two longitudinal nerves and fine, somewhat raised, longitudinal, reticulate nerves between them, a few hairs on the margin; gland prominent, slightly depressed, up to 1 cm from the base, *ca* 1·5 mm long; pulvinus 1–3 mm long. Spikes dense, 2–3 cm long on densely pubescent peduncle *ca* 1 mm long, subtended by an ovate bract. Flowers 5-merous; calyx 0·8–1 mm long lobed to about the middle, membranous, moderately pubescent; corolla 1·3–1·5 mm long, *ca* 1·5 times as long as the calyx; stamens 3–4 mm long; ovary hirsute. Pod glabrous, ± terete, longitudinally striate, *ca* 9 mm long, *ca* 4 mm wide; seeds longitudinal, 5 mm long, *ca* 2 mm wide and 1 mm thick; areole small, open surrounded by pale area; funicle folded, thickened and expanded into cupular aril (Fig. 8c, phyllode).

SOUTH KENNEDY DISTRICT: 90 miles [145 km] from Charters Towers on Clermont Road, May 1962 & Apr 1974, *Gittins* 483 & *Hockings* 17. MITCHELL DISTRICT: 27 miles [43 km] E of Barcaldine, Sep 1956, *Burbidge* 5538.

In Queensland *Acacia stipuligera* is extremely common on sandy red earths usually in woodland of *Eucalyptus similis* in the "desert" country along the Dividing Range between Jericho and Lake Buchanan. It flowers from April to about June.

Plants from Queensland are less pubescent than plants from the Northern Territory, but this does not justify the recognition of the Queensland plants as a distinct variety. The nearest relative of *A. stipuligera* is probably *A. acradenia* but the relationship is not close.

67. Acacia mangium Willd., Sp. Plant 4:1053 (1806); Merrill, Inter. Rumph. Herb. Amboin. 251 (1917); C. T. White, Contrib. Arn. Arb. 4:42 (1933); Pedley, Proc. Roy. Soc. Qd 74:56 (1964), Contrib. Qd Herb. 18:14 (1975). **Type:** Description and figure in Rumphius's "Herbarium Amboinense".

Misapplied names: *Acacia holoserica* A. Cunn. ex G. Don var. *neurocarpa* auct. non Domin; Domin, Biblioth. Bot. 89:270 (1924); White, Contrib. Arn. Arb. 4:42 (1933), *pro syn.*

A. holosericea var. *multispirea* auct non Domin; C. T. White, Contrib. Arn. Arb. 4:42 (1933), *pro syn.*

A. holosericea var. *glabrata* auct non Maiden; C. T. White, Contrib. Arn. Arb. 4:422 (1933), *pro syn.*

A tree to 30 m; branchlets acutely trigonous sometimes slightly scurfy but soon becoming glabrous. Mature phyllodes up to 25 cm long, 2–4 times as long as broad, glabrous or slightly scurfy; four main longitudinal nerves running together at base of phyllode near dorsal margin, with many fine anastomosing secondary veins, the vein islands elongate (at least three times as long as broad); gland basal; pulvinus glabrous 6–10 mm long. Flowers in rather loose spikes to 10 cm long, single or in pairs in the upper axils; peduncles canescent or

pubescent, about 1 cm long; rachis canescent or pubescent. Flowers 5–merous; calyx 0·6–0·8 mm long, with short obtuse lobes; corolla about twice as long as the calyx. Pods linear glabrous, coiled, 3–5 mm broad; valves membranous or slightly woody, depressed between the seeds. Seeds longitudinal, *ca* 5 mm long, black, nitid, rectangular with the funicle folded and forming a cupular fleshy aril beneath the seed.

COOK DISTRICT: Claudie River, 12°45′S, 143°15′E, Oct 1972, *Hyland* 6456. NORTH KENNEDY DISTRICT: Cardwell, May 1969, *Wyatt,* and Sep 1975, *Coveny* 6599 & *Hind.*

Acacia mangium occurs on margins of mangrove communities and rainforests in coastal districts from a little north of Ingham to the Claudie River. It is also found in southern New Guinea and the southern Moluccas. Flowering specimens have been collected in May and fruit appear to mature in October and November. It is not closely related to other species but superficially resembles *A. holosericea.* It can be distinguished from even glabrous variants of *A. holosericea* by the venation of the phyllodes.

The long standing confusion of *A. holsericea* with *A. mangium* has resulted in the misapplication of some names. Merrill considered *A. holosericea* and *A. mangium* to be conspecific, stating that he could detect no differences between Australian specimens and material from Buru. Domin recognised three varieties of *A. holosericea,* one of them based on *A. neurocarpa* A. Cunn. ex Hook. *A. neurocarpa* is conspecific with *A. holosericea* but Domin misapplied the name *A. holosericea* var. *neurocarpa* to a specimen of *A. mangium* that he collected a little north of Cairns. White who knew both *A. mangium* and *A. holosericea* in the field reduced *A. holosericea* to a variety of *A. mangium.* He seems to have referred all taxa with glabrous, subglabrous or glabrescent phyllodes to *A. mangium* var. *mangium.* Consequently he continued Domin's misapplication of the name *A. holosericea* var. *neurocarpa* and referred *A. holosericea* var. *glabrata* to *A. mangium* var. *mangium.*

68. Acacia cowleana Tate, Rep. Horn Exped. 3:187 (1896). **Type:** Horn Expedition, in 1894, *Tate* (K, iso).

Shrub or spindly tree to 4 m tall; branchlets stout, angular, usually with indumentum of dense appressed hairs *ca* ¼ mm long, occasionally glabrous and glaucous; stipules triangular, pubescent. Phyllodes coriaceous, curved, attenuate at the base, acute or obtuse mucronulate with a distinct callus point, pubescent with rather long hairs, golden when young, becoming almost (or quite) glabrous, 8–16 cm long, 9–18(–24) mm wide, 5–12(–14) times as long as wide; many parallel, widely spaced, strongly anastomosing, longitudinal nerves, (2–)3 prominent, the lower ones confluent with each other and contiguous with the margin at the base; gland a basal swelling with small, rimmed orifice; pulvinus 2–6(–9) mm long. Spikes dense, 1·2–2·5 cm long on usually pubescent peduncles 2–8 mm long. Flowers 5–merous; calyx 0·8–1·1 mm long with broad fimbriate lobes 0·2–0·3 mm long, a few hairs at the base, occasionally glaucous; corolla divided to the middle, 1·6–2·2 mm, 1·6–2·5 times as long as the calyx, glabrous or glaucous or occasionally with a few short, stiff hairs on the margin near the top; stamens *ca* 3 mm long; ovary densely pubescent, rarely glaucous. Pod flat but raised over the seeds and slightly contracted between them, glabrous and slightly glaucous, *ca* 7·5 cm long, 3 mm wide. Seeds longitudinal, *ca* 4 mm long, 1·8–2·3 mm wide: areole moderately large, open; funicle with about four folds, then markedly expanded into cupular aril beneath the seed.

BURKE DISTRICT: 13 miles [21 km] SSE of Kajabbi, Aug 1953, *Lazarides* 4008. GREGORY NORTH DISTRICT: 24 miles [39 km] E of Urandangie, Aug 1948, *Perry* 824. MITCHELL DISTRICT: 20 miles [32 km] E of Hughenden, Jun 1954, *Speck* 4521. GREGORY SOUTH DISTRICT: "Cuddapan" Stn, *ca* 80 miles [130 km] WSW of Windorah, Jun 1948, *Everist* 4070.

Acacia cowleana is found to the north-west of a line joining Windorah and Pentland into the Northern Territory and Western Australia, usually on sandy or stony soils. Despite its wide range, in Queensland at least, it has been collected at widely separated localities and is apparently not a common species. It flowers from May to August.

A. cowleana is characterized by the short spikes, phyllodes broadest above the middle and tapering to the base, often obtuse mucronulate, and the rather dense indumentum of the branchlets and phyllodes. Occasionally, however, some specimens are subglabrous and the nervature of the phyllodes is then conspicuous. These specimens have a different aspect from pubescent ones and may be difficult to place with certainty. *A. cowleana* appears to be closely related to *A. gonoclada,* though it has also been confused with *A. holosericea* in some herbaria.

69. Acacia brassii Pedley, Contrib. Qd Herb. 15:6 (1974). **Type:** Wenlock River, 60 miles [96 km] NNW of Coen, 13°06′S 142°57′E, Jul 1968, *Pedley* 2741 (BRI, holo).

Tree to 8 m tall with hard dark furrowed bark. Branchlets, pulvinuses and phyllodes of young plants with a covering of somewhat crowded white hairs *ca* 0·25 mm long and of sparse brownish hairs 0·05 mm long. Ribs of the branchlets glabrous or sometimes covered with a few scattered long hairs. Phyllodes glabrous or the young ones scurfy, narrowly ovate, falcate, 13–19 cm long, (1–)2–3 cm wide, 5–8(–13) times as long as wide, with a prominent gland on the dorsal margin at the base; pulvinus 6–10 mm long; 3 longitudinal nerves conspicuous, the remainder very crowded not conspicuous on living phyllode, hardly anastomosing. Spikes dense *ca* 5 cm long, single or in pairs in the upper axils on peduncles 6 mm long, the rachis and peduncle densely pubescent. Flowers 5-merous; calyx 0·8–1·1 mm long, with somewhat dense hairs, divided almost to the base into oblong lobes rather broad at the tips; corolla lobes ovate 1·3–1·5 mm long joined to the middle with a few long hairs on the back; stamens 2·5–3 mm long; ovary covered with erect hairs *ca* 0·25 mm long. Pod up to 5·5 cm long, 2·5 mm wide, linear, acute, ± straight sometimes long pointed, obscurely striate, glabrous, contracted between the seeds and raised over them. Seeds arranged longitudinally, depressed cylindrical, 3–3·5 mm long, *ca* 1·5 mm wide, 1–1·4 mm thick, the funicle twice folded to form an aril.

COOK DISTRICT: Browns Creek, Pascoe River, Jul 1948, *Brass* 19563; 11°33′S 142°06′E, Cockatoo Creek, 60 miles [96 km] S of Cape York, Jun 1968, *Pedley* 2738 14°10′S 143°42′E, 35 miles [56 km] ESE of Coen, Nov 1965, *Pedley* 1892.

This species occurs on deep sandy bleached grey earths, usually forming distinct communities with *Melaleuca viridiflora* north and north-east of Coen, but is also found on creek banks farther north. It and *A. rothii* are the commonest species of *Acacia* in Cape York Peninsula north of about 15°S.

70. Acacia auriculiformis A. Cunn. ex Benth., London J. Bot. 1:377 (1842); Pedley, Contrib. Qd Herb. 18:17 (1975). **Type:** South Goulburn I., Voyage of "Bathurst", *Cunningham* (K, holo).

Tree to 25 m; branchlets angular, glabrous. Phyllodes similar in texture and shape to those of *A. aulacocarpa,* 10–16 cm long, (12–)15–25(–30) mm wide, 4–9 times as long as wide; 3 prominent longitudinal nerves running together

towards lower margin or in the middle near the base, many fine crowded, somewhat anastomosing secondary nerves; gland basal, distinct swelling with small rimmed orifice at distal end. Spikes up to 8 cm long, somewhat interrupted in pairs in upper axils. Flowers 5-merous; calyx glabrous, 0·7–1 mm long, shortly lobed; corolla 1·7–2 mm long, 2–2·5 times as long as the calyx; stamens *ca* 3 mm long; ovary densely pubescent. Pod flat, rather woody, glaucous, transversely veined with undulate margins, *ca* 6·5 cm long, 1·5 cm wide. Seeds transverse, *ca* 5 mm long, 3·5 mm wide; areole large, almost closed; funicle encircling the seed.

COOK DISTRICT: Normanby River, N of "Kalpowar", Oct 1970, *Hyland* 4865.

Acacia auriculiformis is confined to Cape York Peninsula, north of 16°S where it is found on well drained soils along streams. It extends to Arnhem Land and New Guinea. Flowers have been collected in May and June.

The pods of *A. auriculiformis* and *A. aulacocarpa* are similar and the two species are closely related. Without pods herbarium specimens of *A. auriculiformis* and *A. polystachya* are difficult to distinguish. The nerves of *A. polystachya* run together and often join some distance (1 cm) from the base of the phyllode leaving a distinct margin without nerves immediately above the pulvinus. Such a margin is usually not present in *A. auriculiformis* and with practice this rather indefinite character permits a high level of accuracy in distinguishing the two. *A. leptocarpa* is sometimes confused with *A. auriculiformis* and *A. polystachya*, but it has widely spaced nerves (1–2/mm across the middle of the phyllode) in contrast to the crowded ones (4–6/mm) of *A. auriculiformis* and *A. polystachya*.

71. Acacia polystachya A. Cunn. ex Benth., London J. Bot. 1:376 (1842).
Type: Haggerstone I. [12°02′S 143°18′E], Aug $\frac{20}{1820}$, *Cunningham* (K; lectotypus novus)

A tree to 25 m; branchlets angular, glabrous, slender. Phyllodes rather chartaceous in texture, glabrous, 9–17(–23) cm long, (13–)16–23(–25) mm wide, 6–9 times as long as wide; 2–3 longitudinal nerves prominent, tending to run together in the middle of lamina at the base, many fine anastomosing secondary nerves (4–5/mm); pulvinus 2–9 mm long; gland ± conspicuous, 4–5m from the base. Spikes sparse 5–8 cm long, with glabrous rachises, on peduncles *ca* 5 mm long in pairs at the base of rudimentary axillary shoots. Flowers 5-merous; calyx rather membranous, broad, 0·7–0·9 mm long, glabrous with fimbriate lobes *ca* 0·25 mm long; corolla deeply lobed, glabrous, 1·5–2 mm long, 2·2–2·6 times as long as the calyx; stamens 3–4 mm long; ovary densely pubescent. Pod flat, glabrous and ± glaucous, up to 10 cm long, 6–8 mm wide. Seeds longitudinal, 4·2 mm long, 3 mm wide; areole broad and open; funicle encircling seed and thickened into a clavate aril.

COOK DISTRICT: Upper Massey Creek *ca* 15 miles [24 km] ENE of Coen, Oct 1962, *Smith* 11767 & 11884; Hartleys Creek, N of Cairns, Sep 1950, *Smith* 4638. NORTH KENNEDY DISTRICT: Palm Is., *Bancroft*.

Acacia polystachya extends from Cairns to Banks Island in Torres Strait with one specimen from the Palm Islands. It has not been recorded from the Northern Territory or New Guinea. It is one of the few species of *Acacia* found in rainforest. In the McIlwraith Range, east of Coen, *A. polystachya* is recorded from rainforest (deciduous vine thicket and semi-deciduous mesophyll vine forest) on alluvial soils. It also occurs elsewhere in vine thicket and along beaches. It flowers from May to July and fruit appear to mature from September to November though empty pods remain on trees for a considerable time.

Acacia polystachya is difficult to distinguish from *A. auriculiformis* if pods are not available (see *A. auriculiformis*) but the two species are not particularly closely allied.

72. Acacia tropica (Maiden & Blakely) Tindale, Contrib. N.S.W. Nat. Herb. 4:273 (1972). Based on *Acacia cunninghamii* Hook. var. *tropica* Maiden & Blakely, J. Roy. Soc. West Aust. 13:31 (1927). **Type:** Hells Gate, Roper River, Aug 1911, *Baldwin Spencer* (NSW, holo; K, iso).

Tree to 6 m tall; branchlets glabrous, angular, often reddish. Phyllodes glabrous, ± straight, 9–16 cm long, 14–25 mm wide, 4–7(–8·5) times as long as wide; (2–)3(–4) longitudinal nerves more prominent than the rest, running together 1–2 cm from the base, secondary longitudinal nerves widely spaced (16–24/cm); gland basal; pulvinus 5–8(–10) mm long rather indefinite in length because of narrowing of phyllode at the base. Spikes dense 3–4·5 cm long on peduncles 7–10 mm long in pairs in the axils. Flowers 5–merous; calyx glabrous or rarely with a few hairs at the base, 0·4–0·6 mm long, the lobes ciliolate; corolla glabrous; 1·5–2 mm long; 3–4 times as long as the calyx; stamens 3–4 mm long; ovary pubescent. Mature pods not seen; immature ones straight, flat glabrous, similar to those of *A. oligophleba* and *A. crassa*.

BURKE DISTRICT: "Westmoreland" Station [*ca* 17°20'S 138°15'E], Jun 1948, *Perry* 1344; Jun 1963, *Gittins* 845; Jun 1966, *Pedley* 2092.

Acacia tropica is extremely common in the far north-western part of the State on sandy soil with *Melaleuca viridiflora*. It extends east as far as Croydon. It flowers from about mid-June to August. Mature pods have not been collected.

Because of the widely spaced secondary nerves *A. tropica* appears to be more closely allied to *A. oligophleba* and *A. leptocarpa* than it is to *A. concurrens* (*A. cunninghamii*) and its relatives.

73. *Acacia oligophleba Pedley. **Type:** NORTH KENNEDY DISTRICT: 7 miles [11 km] from Pentland on road to Torrens Creek, Jan 1966, *Pedley* 2121 (BRI, holo)

Small tree *ca* 5 m tall; branchlets stout, angular, glabrous to sparsely appressed pubescent, the hairs *ca* 0·2 mm long; young tips sometimes yellowish. Phyllodes straight or curved, narrowed to each end, acute, glabrous or sparsely appressed pubescent, the hairs often confined to the base, 14·5–23 cm long, 1·5–3 cm wide, 6–13 times as long as wide, three longitudinal nerves prominent, one extending only about 2/3 length of phyllode, two lower ones running together near base of phyllode, secondary nerves prominent (1·5–2·5/mm) anastomosing;

***Acacia oligophleba** sp. nov. affinis *A. leptocarpae* A. Cunn. ex Benth. interdum indumento pilorum appressorum phyllodiis dissimiliter nervatis et spicis brevioribus differt. Typus: Pedley 2121 (BRI, holo).

Arbor parva circa 5 m alta; ramuli circa 0·2 mm longi; surculi interdum flavidi. Phyllodia recta curvatave, in extrema angustata, acuta glabra vel sparsim appresse pubescentes, pilis ad basem saepe limitatis, 14·5–23 cm longa, 1·5–3 cm lata, 6–13–plo longiora quam lata; 3 nervi longitudinales prominentes, unicus per tantum duos longitudinis trientes phyllodii extensus, duo inferni versus phyllodii basem concurrentes; nervi secundarii prominentes (1·5–2·5/mm) anastomantes; pulvinus 3–6 mm longus; glans basalis ex tumore prominenti et orificio labiato constans. Spicae parce densae 3–4 cm longae in pedunculis sparsim vel modice appresse pubescentibus 7–13 mm longis binatim basi surculi axillaris rudimentalis portatae. Flores 5–meri; calyx crassus 0·6–0·9 mm longus glaber vel magis vulgo aliquot pilis basi, lobis obtusis fimbriatis circa 0·2 mm longis; corolla profunde lobata glabra, 1·8–2 mm longa, 2–3–plo longiora quam calyx; stamina 3–4 mm longa; ovarium glabrum vel pubescens. Legumen lineare planum convexum super seminibus et leviter indentum inter ea, circa 3–5 mm latum. Semina longitudinalia, 4 mm longa, 2·5 mm lata; areola magna aperta; funiculus flavidus 4–plo plicatus arillum basilem faciens.

pulvinus 3–6 mm long; gland basal consisting of prominent swelling and rimmed orifice. Spikes moderately dense 3–4 cm long on sparsely to moderately dense appressed pubescent peduncles 7–13 mm long in pairs at base of rudimentary axillary shoot. Flowers 5–merous; calyx stout 0·6–0·9 mm long, glabrous or more commonly with a few hairs at the base and obtuse fimbriate lobes *ca* 0·2 mm long; corolla deeply lobed, glabrous, 1·8–2 mm long, 2–3 times as long as the calyx; stamens 3–4 mm long; ovary glabrous or pubescent. Pod linear, flat, raised over seeds and slightly indented between them, *ca* 12 cm long, 3·5 mm wide. Seeds longitudinal, 4 mm long, 2·5 mm wide; areole large open; funicle yellow, folded *ca* 4 times forming basal aril. (Fig. 8d, phyllode).

BURKE DISTRICT: 58 miles [93 km] SSE of Camooweal, May 1948, *Perry* 737. NORTH KENNEDY DISTRICT: 7 miles [11 km] E of Torrens Creek, Jul 1954, *Speck* 4558. MITCHELL DISTRICT: about 85 miles [135 km] N of Aramac, Jun 1949, Everist 3863.

Acacia oligophleba is common on sandy red or yellow earths in eucalypt woodland in "desert country" between Jericho and Pentland, but it is scattered through north-western Queensland and extends to the Northern Territory. It flowers in June and July. It appears to be intermediate between *A. leptocarpa* and *A. cowleana*.

74. Acacia leptocarpa A. Cunn. ex Benth. London J. Bot. 1:376 (1842); Pedley, Contrib. Qd Herb. 18:19 (1975). **Lectotype:** Cape Flinders, Aug $\frac{118}{1820}$, *Cunningham* (K; BM. iso).

Tree to *ca* 8 m tall; branchlets glabrous, angular, soon becoming terete. Phyllodes usually falcate, acute attenuate at the base, glabrous, (10–)12–21(–26) cm long, 10–22(–26) mm wide, 6–15(–18) times as long as wide; three longitudinal nerves prominent, yellowish, crowded into narrow basal part of phyllode; secondary nerves ± parallel, widely spaced (1–2/mm); gland basal, prominent swelling and small orifice, usually not rimmed; pulvinus (3–)5–10 mm long. Spikes moderately dense, 5–7 cm long with glabrous rachis, on glabrous peduncles 3–8 mm long in pairs at base of rudimentary axillary shoot. Flowers 5–merous; calyx 0·75–1 mm long, stout, subglabrous except for a few fringing hairs, the lobes 0·2–0·3 mm long; corolla glabrous, 1·9–2·4 mm long, 2–2·6 times as long as the calyx, deeply lobed; stamens 3–3·5 mm long; ovary densely pubescent. Pod linear, somewhat coiled, flat but raised over seeds, up to 12 cm long, 3 mm wide. Seeds longitudinal, *ca* 4 mm long, 2·5 mm wide; areole oblong, open; funicle yellow, folded many times forming aril almost as long as the seed.

BURKE DISTRICT: 16 miles [26 km] from Turn-off Lagoon on Road to "Westmoreland". Jun 1966, *Pedley* 2094. COOK DISTRICT: near Mareeba, Apr 1953, *Melville* 3722. NORTH KENNEDY DISTRICT: *ca* 16 km N of Cardwell, Aug 1947, *Smith* 3237. SOUTH KENNEDY DISTRICT: Mackay, Sep 1970, *Bucholz*. PORT CURTIS DISTRICT: Byfield, Sep 1931, *White* 8152. WIDE BAY DISTRICT: between Childers and Bundaberg, Apr 1962, *Parsons*.

Acacia leptocarpa ranges from a little north of Bundaberg through coastal districts to Cape York. It also occurs in coastal districts of the Northern Territory and the extreme north-western part of Queensland and in southern New Guinea. It is extremely common in eucalypt communities between Townsville and Cardwell, and east of Mareeba, usually on sandy soils. Flowering occurs from May to August, probably earlier in the southern part of its range than in the north.

A. leptocarpa is a well marked species easily recognised because of its usually quite falcate phyllodes with widely spaced secondary nerves. Despite this, herbarium specimens of other species are often referred to *A. leptocarpa.* For example all specimens, other than those collected by Cunningham seen at the British Museum (National History) were wrongly identified. The Port Essington specimen referred by Bentham (Fl. Aust. 2:408) to *A. polystachya* is *A. leptocarpa.*

75. Acacia longispicata Benth. in Mitch., Trop. Aust. 298 (1848); Pedley, Contrib. Qd Herb. 15:9 (1974). **Type:** Subtropical New Holland, Sep 1846, *Mitchell* "293" (K, holo).

A. cunninghamii Hook. var. *longispicata* (Benth.) Benth., Fl. Aust. 2:407 (1864). Based on *A. longispicata* Benth.

Tree to 10 m tall; branchlets stout angular with indumentum of dense appressed hyaline hairs *ca* 0·1 mm long or of dense spreading hairs 0·2–0·4 mm long, the hairs usually extending to pulvinuses, phyllodes and peduncles. Phyllodes 9–18 cm long, 1·3–4 cm wide, 4–8(–12) times as long as wide, phyllodes on young plants considerably larger; 3 longitudinal nerves more prominent than the rest; secondary ones anastomosing, rather widely spaced; gland basal large, pulvinus 6–10 mm long. Spikes sparse to dense, depending on length, 5–12 cm long, on peduncles 6–8(–15) mm long in pairs in the upper axils. Flowers 5–merous; calyx moderately pubescent, the indumentum sometimes only at the base, 0·5–0·8 mm long, truncate or sinuolate; corolla glabrous 1·6–2 mm long, 2·5–3·5 times as long as the calyx; stamens *ca* 3 mm long; ovary densely pubescent. Pods straight, flat but conspicuously convex over the seeds on each side, 3–6 cm long, 2·5–3·5 mm wide, glabrous, seeds longitudinal (2·5–)3·5–4·5 mm long, (1·5–)2–2·5 mm wide; areole oblong, almost closed; funicle yellow fleshy folded 5–6 times beneath seed.

75a. A. longispicata subsp. **longispicata**

Branchlets with indumentum of appressed hairs; spikes 6–12 cm long. (Fig. 10a, pod).

BURKE DISTRICT: Poison Creek, 14 miles [22 km] N of "Mt. Sturgeon" Stn., Jun 1953, *Lazarides* 3661. NORTH KENNEDY DISTRICT: 18°35′S 145°20′E [*ca* 95 km S of Mt Garnet], Aug 1967, *Morain* 143. MITCHELL DISTRICT: Enniskillen, Nov 1943, *White* 12351. SOUTH KENNEDY DISTRICT: 8 miles [13 km] W of Alpha, 23°38′S 146°30′E, Nov 1968, *Pedley* 2810. LEICHHARDT DISTRICT: 30 km ± N of Injune, Aug 1973, *Pedley* 4121. MARANOA DISTRICT: 15 miles [24 km] N of Mitchell, Aug 1968, *Martensz* 3900.

75b. *A. longispicata Benth. subsp. **velutina** Pedley. **Type:** Burnett District: 12 km NW of Kingaroy, 26°23′S 151°41′E, Aug 1973, *Pedley* 4134.

Branchlets with indumentum of dense long spreading hairs; spikes 5–7(–9) cm long. Pods unknown.

A. longispicata is widely spread on usually sandy soils from near Kingaroy to about Mt Garnet usually at no great distance from the Dividing Range. It occurs as scattered trees in eucalypt woodland or in dense pure stands on roadsides. It is particularly common on roads north-east and north-west of Taroom.

***A. longispicata** Benth. subsp. **velutina** Pedley, subsp. nov.

Ramuli indumento pilorum densorum longorum patentium obsiti; spicae 5–7(–9) cm longae. Legumen ignotum. **Typus:** *Pedley* 4134 (BRI, holotypus; A, B, CANB, E, K, L, NSW, MO, PR, isotypi).

It flowers from July to about September, and probably begins to flower about a month earlier in the northern part of its range than it does in the south. Fruits mature about November.

A. longispicata is usually an easily identified plant with large silvery phyllodes and long spikes, but there is a fair range of variation. *A. longispicata* subsp. *velutina* which is known only from one locality 300 km east of the nearest known stand of *A. longispicata* subsp. *longispicata* has dense spreading hairs on the branchlets and pulvinuses but the phyllodes are usually glabrous. The hairs of *A. longispicata* subsp. *longispicata* are short and appressed. Plants from the northern part of the range of *A. longispicata* subsp. *longispicata* often have smaller phyllodes than those described and plants from throughout its range often have short spikes. Many of the specimens with short spikes were collected late in the flowering season and the production of short spikes may be determined by environmental factors, perhaps high temperatures or low soil-moisture. The density of hairs varies, but some hairs are always present on branchlets and phyllodes (particularly near the base or along the major nerves). *Lazarides & Story* (*ca* 13 miles ESE of Rolleston) is almost glabrous; *Blake* 6992 (Lexington, N. of Springsure) has extremely short narrow phyllodes.

The relationships of *A. longispicata* are with *A. crassa* and more remotely, with *A. grandifolia.*

76. Acacia crassa Pedley, Contrib. Qd Herb. 15:9 (1974). **Type:** Darling Downs District: about 28 miles [45 km] SSW of Dalby on Moonie Highway, Sep 1961, *Pedley* 810 (BRI, holo).

Tree to 10 m tall; branches stout angular, either glabrous and usually reddish with distinct lenticels or with indumentum of dense spreading hairs 0·2–0·4 mm long extending to pulvinuses, peduncles and sometimes to bases of mature phyllodes. Phyllodes 10–25(–30) cm long, 8–25(–30) mm wide, (5·5–)9–18(–22) times as long as wide, phyllodes on young plants either longer and more falcate or wider than those of mature plants; three longitudinal nerves more prominent than the rest often running together at the base of the phyllodes, secondary longitudinal nerves anastomosing; gland basal; pulvinus (3–)5–10 mm long. Spike (3–)4·5–9 cm long, sparse to dense, on peduncles (2–)4–8 mm long in pairs in the axils, sometimes lateral on axillary shoots. Flowers 5–merous; calyx cylindrical, stout, glabrous or with a few hairs at the base 0·6–1·2 mm long the lobes 0·1–0·2 mm long; corolla glabrous 1·6–2·4 mm long, 2–3 times as long as the calyx; stamens 3–4 mm long; ovary pubescent. Pods glabrous, straight, flat, convex over the seeds and slightly contracted between them to 7 cm long, 2·5–3·5 mm wide. Seeds longitudinal 3–6 mm long, 1·5–2·5 mm wide; areole open, somewhat elongate; funicle folded about 5 times, forming a basal aril about half as long as seeds.

76a. A. crassa subsp. **crassa.**

Glabrous with strongly falcate phyllodes to 30 cm long on young plants; spikes usually dense; seeds 4·5–6 × 2–2·5 mm.

SOUTH KENNEDY DISTRICT: Beta, 23°38′S 146°19′E, Aug 1973, *Pedley* 4096. LEICHHARDT DISTRICT: Isla Gorge, Aug 1973, *Sharpe & Hockings* 538. PORT CURTIS DISTRICT: 10 km E of Biloela, Sep 1972, *Daniels.* MARANOA DISTRICT: *ca* 8 miles [13 km] from Yuleba on Surat road, Sep 1961, *Jones* 179. DARLING DOWNS DISTRICT: Barakula, Sep 1948, *Blake* 18199; Inglewood, Sep 1934, *White* 12824. BURNETT DISTRICT: 15 miles [24 km] from Eidsvold on Cracow road, Sep 1959, *Johnson* 912.

76b. *__A. crassa__ subsp. **longicoma** Pedley. **Type:** Wide Bay District: 6 km WNW of Gin Gin, 24°55′S 151°51′E Aug 1973, *Pedley* 4080 (BRI, holo; A, CANB, K, iso).

Young plants (including the phyllodes) densely pubescent; phyllodes straight, wide, up to 20 cm long; spikes often sparse; seeds *ca* 3 × 1·5 mm.

PORT CURTIS DISTRICT: "Torilla" Homestead [22°27′S 150°04′E], Aug 1963, *Speck* 1722. LEICHHARDT DISTRICT: Lily Creek, 32 km ± W of Baralaba, Aug 1973, *Pedley* 4086. DARLING DOWNS DISTRICT: Gurulmundi, Aug 1961, *Phillips* Canberra Bot. Gard. 013554 & Sep 1961, *Pedley* 875. BURNETT DISTRICT: Allies Creek [*ca* 26°05′S 151°10′E], Aug 1976, *Henderson*. WIDE BAY DISTRICT: near Booyal, 25°11′S 152°02′E, Aug 1973, *Pedley* 4079.

A. crassa occurs farther inland and farther north than *A. concurrens*, the species that it resembles most closely. They both flower about the same time.

A. crassa subsp. *crassa* is extremely common in the Darling Downs district but extends northward to the Tropic of Capricorn and southward into New South Wales. It is a common component of eucalypt woodland and often forms dense stands in disturbed situations. *A. crassa* subsp. *longicoma* has a more coastal distribution. It is particularly common in the Monto–Gin Gin area but occurs sporadically from Eidsvold–Wandoan to Shoalwater Bay. In their type localities the two subspecies have rather different facies, but in the western part of the Burnett district only the indumentum distinguishes *A. crassa* subsp. *longicoma* from *A. crassa* subsp. *crassa*.

77. Acacia concurrens Pedley, Contrib. Qd Herb. 15:9 (1974). Based on *A. cunninghamii* Hook., Ic. Plant. t. 167 (1837), non G. Don. **Type:** Brisbane River, *Cunningham* (K, holo).

Tree to 10 m tall with dark furrowed bark; branchlets angular, particularly on young plants, somewhat scurfy. Phyllodes obliquely obovate, the lower margin ± straight, the upper curved, 10–16(–18) cm long, (0·9–)1·2–3 cm wide, 3·5–9(–12) times as long as wide, somewhat scurfy when young, glabrous 3(–4) longitudinal nerves much more prominent than the rest, the lower two running together into margin up to several cm from the base, secondary longitudinal nerves anastomosing, fairly widely spaced; pulvinus 5–9 mm long; gland small, basal. Spikes moderately dense, in pairs in the upper axils, 5–10 cm long on peduncles 5–8(–10) mm long, rachis slightly glaucous. Flowers 5-merous; calyx stout, cylindric, 0·6–1 mm long, shortly toothed, the teeth *ca* 0·2 mm long, a few hyaline hairs (*ca* 0·1 mm long) towards the base; corolla 1·8–2 mm long, *ca* 2–3 times as long as the calyx, ovate uninerved lobes strongly reflexed; stamens *ca* 3 mm long; ovary with dense indumentum of white felted hairs. Pods linear, coiled, somewhat fleshy when young but when mature valves flat, coriaceous, glabrous, 6–8 cm long, 2·5–4 mm wide; seeds longitudinal 3·5–4 mm × 1·8–2 mm with a large open areole; funicle folded beneath seed forming aril about as long as the seed. (Fig. 7b, position of gland.)

DARLING DOWNS DISTRICT: 24 miles [38 km] SE of Warwick, Jun 1962, *Cudmore*. BURNETT DISTRICT: 3 miles [5 km] W of Nanango, Aug 1963, *Pedley* 1384. MORETON DISTRICT: Haighmoor near Ipswich, Aug 1960, *Pedley* 663.

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*__A. crassa__ subsp. **longicoma** Pedley, subsp. nov.

Plantae (phyllodia inclusa) dense pubescentes; phyllodia recta lata usque 20 cm longa; spicae saepe sparsiflorae; semina *ca* 3 × 1·5 mm. **Typus:** *Pedley* 4080 (BRI, holo; A, CANB, K, iso).

Acacia concurrens is more or less restricted to coastal areas from the Mooloolah River (Q.) south to the Hastings River (N.S.W.). It is an extremely common component of lower tree layers in eucalypt open-forest and sometimes forms dense pure stands in country that has been cleared. It flowers from about mid-July to September, noticeably later in the year than *A. leiocalyx* which often grows with it.

In the past, the name *A. cunninghamii* has been applied in an extremely broad sense. *A. crassa, A. cretata, A. leiocalyx, A. longispicata* and *A. tropica,* as well as *A. concurrens* have all been referred to it. It has included at one time or another all the Queensland species with large phyllodes with anastomosing secondary nerves, the major longitudinal nerves tending to run together or to the lower margin near the base. The species are closely related and difficult to identify from herbarium material. Identification of plants in the field is somewhat easier. The colour and angularity of the branchlets, the colour and length of flowering spikes, the size and colour of phyllodes, especially those on young plants and the time of flowering are of value in identifying species. Indumentum, the length of pulvinuses and the density of the secondary nerves are useful in identifying dried specimens.

78. Acacia leiocalyx (Domin) Pedley, Contrib. Qd Herb. 15:10 (1974). Based on *A. glaucescens* Willd. var. *leiocalyx* Domin, Biblioth. Bot. 89:269 (1926). **Lectotype:** prope Brisbane River, *Dietrich* 568 (PR; HBG, iso).

Shrub or tree to 6 m; branchlets sharply angled, sometimes almost winged, often red, glabrous or rarely slightly scurfy; young tips pinkish, drying dark. Phyllodes glabrous, 8–16 cm long, 0·7–2·5(–3·5) cm wide, 4–16(–20) times as long as wide, phyllodes on young plants often much broader, 3 longitudinal nerves more prominent than the rest, running together or into lower margin near the base, secondary longitudinal nerves anastomosing, 25–45/cm in middle of the leaf; gland basal; pulvinus (2–)3–4 mm long. Spikes in axillary pairs on peduncles 3–8 mm long, moderately dense to sparse, 3–7(–10) cm long. Flowers 5–merous; calyx cylindrical 0·5–0·9 mm long glabrous or rarely with a few hyaline hairs near the base, sinuately lobed; corolla glabrous 1·5–2 mm long, 2–3 times as long as the calyx, the lobed somewhat apiculate, strongly reflexed; stamens 3–4 mm long; ovary tomentose. Pods linear, loosely and irregularly coiled, thick and succulent when immature, flat and dry when mature, *ca* 7 cm long, 3–4 mm wide; seeds longitudinal ca 3·5 × 1·5 mm, black, shining; areole long, open; funicle folded at base of seed, forming aril about as long as the seed.

78a. A. leiocalyx subsp. **leiocalyx**

Phyllodes 8–12(–16) cm long, 12–25(–35) mm wide, 4–9 times as long as wide.

NORTH KENNEDY DISTRICT: 42 miles [67 km] from Charters Towers on Clermont road, May 1960, *Johnson* 1854. SOUTH KENNEDY DISTRICT: 17 miles [27 km] E of "Pasha [*ca* 21°40'S 147°55'E], Jul 1964, *Pedley* 1727A. PORT CURTIS DISTRICT: 13 miles [21 km] W of Calliope, Jun 1962, *Pedley* 1025. LEICHHARDT DISTRICT: Bogantungan, Jun 1964, *Pedley* 1718. MARANOA DISTRICT: 5 miles from Yuleba, Sep 1961, *R. Jones* 176. DARLING DOWNS DISTRICT: 10 miles [16 km] S of Meandarra, Mar 1959, *Pedley* 385. BURNETT DISTRICT: Biggenden, Oct 1930, *White* 7301. WIDE BAY DISTRICT: near Booyal, 25°13'S 152°04'E, Apr 1973, *Pedley* 4070. MORETON DISTRICT: Albert River, Aug 1930, *Hubbard* 3816.

78b. ***A. leiocalyx** subsp. **herveyensis** Pedley. **Type:** Mullet Creek, 24°42′S 152°04′E, Aug 1969, *Pedley* 2867 (BRI, holo).

Phyllodes 9–16 cm long, 7–14(–16) mm wide, 8–16(–19) times as long as wide.

PORT CURTIS DISTRICT: Yeppoon road, May 1925, *Court;* near Round Hill Head, Aug 1969, *Pedley* 2873. WIDE BAY DISTRICT: Boonooroo 23°39′S 152°53′E, Nov 1970, *Boyland* 1507; 20 miles [32 km] SW of Double Island Pt, Aug 1964, *Everist* 7658.

Acacia leiocalyx is one of the most widespread of the Queensland species previously referred to as *A. cunninghamii* (= *A. concurrens,* see p. 178). It extends from the northern part of the Burdekin Basin to as far south as about 32°S in coastal districts of New South Wales. (*Coveny* NSW 101508, in NSW). Plants on beaches a little north of Sydney are probably naturalized. It favours well drained, often shallow soils, and is extremely common in eucalypt communities in the south-east, particularly in the Bundaberg–Gympie area.

In coastal districts of Queensland *A. leiocalyx* subsp. *leiocalyx* flowers from about mid-April to July and usually finishes flowering near Brisbane before *A. concurrens,* which is also common in the area, begins to flower. *A. leiocalyx* subsp. *herveyensis* however, flowers decidedly later, from July to September. In July 1966 all plants of *A. leiocalyx* subsp. *leiocalyx* studied in the Maryborough-Pialba area had finished flowering while no plants of the less common *A. leiocalyx* subsp. *herveyensis* with open flowers were found. In inland Queensland flowering is more irregular and extends over a longer period—late April to August. Individual inland populations often have a more prolonged flowering period than do coastal populations. That is, plants in inland populations are often at widely different stages of flowering while plants in coastal populations are more or less at the same flowering stage.

From a rather small number of herbarium specimens studied it appears that plants in north-eastern New South Wales flower later than plants in southern Queensland.

A. leiocalyx subsp. *herveyensis* has narrower phyllodes and a later flowering period than *A. leiocalyx* subsp. *leiocalyx.* It occurs within about 25 km of the coast between 23° and 25°S latitude. A specimen from near Crescent Hill (31°S) (*McGillivray & Coveny* 367, NSW) approaches *A. leiocalyx* subsp. *herveyensis* but further field studies and collections in New South Wales are needed to establish any pattern of variation.

A. leiocalyx is distinguished from related species by its angular red branchlets, short pulvinuses and usually glabrous calyxes. On an extremely small proportion of plants one or two hyaline hairs occur at the base of the calyx. This may indicate some gene exchange with *A. concurrens* or *A. crassa.* In the field *A. leiocalyx* is a well defined, easily identified species and intergrading with related species is slight.

A variant which may eventually warrant formal recognition is found in a small area in central Queensland. (Representative specimens—Leichhardt District: *Lazarides & Story* 118 & 132). It usually has a few hairs on the calyx, but has remarkably consistently narrower phyllodes 11–14 cm × 11–12 mm.

***A. leiocalyx** subsp. **herveyensis** subsp. nov.

Phyllodia 9–16 cm longa, 7–14(–16) mm lata, 8–16(–19)–plo longiora quam lata. Typus: *Pedley* 2867 (BRI, holotypus).

79. Acacia holosericea A. Cunn. ex G. Don, Gen. Syst. 2:407 (1832); Pedley, Proc. Roy. Soc. Qd, 74:57 (1964). **Type:** Port Keats, Cambridge Gulf, Oct - $\frac{478}{1819}$, *Cunningham* (BM; K; lectotypus novus).

A. mangium Willd. var. *holosericea* (G. Don) C. T. White, Contrib. Arnold Arbor. 4:42 (1933). Based on *A. holosericea.*

A. neurocarpa A. Cunn. ex Hook., Icon. Plant. 2. t. 168 (1837). **Type:** Port Keats, Cambridge Gulf, Oct $\frac{478}{1819}$, *Cunningham* (K, holo—see below for discussion.)

A. holosericea A. Cunn. ex G. Don. var. *neurocarpa* (Hook.) Domin, Biblioth. Bot. 89:270 (1926). Based on *A. neurocarpa.*

A. holosericea var. *glabrata* Maiden, Proc. Roy. Soc. Qd 30:48 (1918). **Type:** Gilbert River, *Bick* 146 (BRI, iso).

A. holosericea A. Cunn. ex G. Don var. *multispirea* Domin, Biblioth. Bot. 89:270 (1926). **Type:** in xerodrymio apud rivulum prope opp. Chillagoe, Feb 1910, *Domin* "5176" (PR, holo).

A shrub or tree to 5 m; branchlets acutely trigonous, glabrous sericeous or tomentose. Phyllodes to 25 cm long, 15–95 mm broad, 2–9 times as long as broad, acute or obtuse, with a small glandular mucro, sometimes glabrous but usually sparsely to densely sericeous, tomentose, velutinous or hoary, with a circular or oval gland on the dorsal edge at the base of the lamina; three (rarely two) longitudinal nerves more prominent than the rest, all running into the dorsal margin near the base; secondary nerves reticulate, prominent. Petioles sericeous or tomentose, 5–12 mm long. Spikes 3–6 cm long, singly or in pairs in the upper axils; peduncles sericeous or tomentose, but rachis glabrescent. Flowers scattered or moderately crowded; calyx 0·5–0·7 mm long with obtuse lobes *ca* 0·15 mm long, the whole sericeous or tomentose; corolla about three times as long as the calyx, sericeous or tomentose though sparsely so. Pod glabrous or pubescent, coiled, 2·5–5 mm broad; valves membranous or slightly woody, depressed between the longitudinal seeds. Seeds rectangular, black, nitid, *ca* 5 mm long, with a small cupular aril at the base.

BURKE DISTRICT: Mica Creek, Mt Isa, Aug 1970, *Maloney* 14/70 (NSW 119759). COOK DISTRICT: Gillies Highway between Gordonvale and Yungaburra, Jul 1967, *Brass* 33620. NORTH KENNEDY DISTRICT: "Blue Range" Stn, Burdekin River, Jun 1975, *Thorsborne* 67. SOUTH KENNEDY DISTRICT: 25 miles [40 km] NE of Mt Coolon, Oct 1967, *Anderson.* PORT CURTIS DISTRICT: 75 miles [120 km] from Marlborough on Sarina road, May 1960, *Johnson* 1788. WARREGO DISTRICT: Bulloo River on Adavale–Quilpie road, 26°20'S 144°20'E, Jul 1968, *Beale.*

A. holosericea ranges from the tropical parts of Western Australia and the Northern Territory to north-western Queensland, the southern part of Cape York Peninsula and south through drier coastal and sub-coastal districts to about Rockhampton. Usually it grows on sandy or gravelly banks of seasonally dry streams but it is found occasionally on more fertile soils in "dry" or "monsoon scrub". The specimen from the Bulloo River, south-west of Adavale was collected from a plant believed to have become established after floods in 1963. The locality is about 300 km south-west of the nearest known population of *A. holosericea,* and none is known to occur in the area drained by the Bulloo.

Flowers have been collected from April to October, but the main period of flowering is June-August and fruiting, August-October.

As previously noted (1964) *A. holosericea* exhibits a wide range of variation, particularly in phyllode form and in density of indumentum. Glabrate individuals occur throughout the species' range but there appears to be a continuous graduation from more or less glabrous to densely pubescent plants. Both *A. holosericea* var. *glabrata* and var. *multispirea* were based on ± glabrous specimens. *A. holosericea* var. *pubescens* F. Muell. is *A. pellita* O. Schwarz.

A. holosericea and *A. mangium* have been confused, with the result that names have been misapplied (see *A. mangium*, p. 170). Lectotypification of *A. holosericea* was found to be necessary to avoid further confusion. In the herbarium at Kew three sheets have been segregated as types. One is *A. dunnii*, another which consists of two twigs and three detached phyllodes is *A. holosericea* but bears two labels with different dates of collection and different localities, Repulse Bay, June 1819 and Port Keats, October 1819. The third sheet consists of a twig with some fruit of *A. holosericea* attached, and a detached phyllode of *A. dunnii*. On a label attached to the twig is written "*Acacia neurocarpa*/ Cambridge Gulf". The material separated as types in the herbarium of the British Museum (Natural History) is less confused. There are two specimens, both collected by Cunningham at Cambridge Gulf in 1819 during the second voyage of the "Mermaid". One is *A. dunnii*, the other is selected as lectotype. It would be possible to choose a portion of one of the sheets at Kew as lectotype, but there is less likely to be confusion if the BM sheet is chosen. A similar situation pertains in the case of *A. simsii*.

The type of *A. neurocarpa* is evidently a duplicate of the lectotype of *A. holosericea*. Domin reduced *A. neurocarpa* to varietal rank, but his specimen from Harvey's Creek (PR) is *A. mangium*.

80. Acacia nesophila Pedley, Contrib. Qd Herb. 15:12 (1974). **Type:** Cook District: near Irvinebank, *ca* 10 miles [16 km] W of Herberton, Apr 1967, *Pedley* 2319 (BRI, holo).

Shrub up to 3 m tall; branchlets somewhat coarse, angular, scurfy or with a covering of somewhat crowded flexuose hairs *ca* 0·2 mm long. Phyllodes thick, scurfy, velvety, tomentose, subglabrous or rarely glabrous gland on the dorsal margin at the top of the 4–5 mm long pulvinus; 3–5 conspicuous longitudinal nerves not running into the lower margin of the phyllode, secondary nerves strongly reticulate forming ± oblong areoles. Dense spikes up to 4 cm long in pairs in the upper axils, rachises and peduncles tomentose, the latter 5 mm long. Flowers cylindrical, 5–merous; calyx 1 mm long with glabrous lobes 0·3 mm long slightly pubescent except for the apex; lobes of the corolla 1·4 mm long ovate minutely papillose on the margins, at first united to the middle ultimately separating; stamens *ca* 2 mm long; ovary densely pubescent, the style thick. Pod up to 5 cm long, 3–4 mm broad, linear, curved, slightly contracted between the seeds, raised over them; seeds longitudinal, oblong, black, 3·5–4 mm long, 2–3·5 mm broad, funicle thickened and folded into a yellow aril.

Cook District: 8·8 miles [14·2 km] SSW of Palmer River, Sep 1975, *Coveny* 6975 and *Hind* (NSW 107801). North Kennedy District: Acheron I., 24 miles [38 km] NW of Townsville, Jul 1966, *Birch* I/168.

A. nesophila is a spindly shrub, often hidden among grasses, in eucalypt woodland. It flowers irregularly. Flowering specimens have been collected in March, April and August but mature fruit have also been collected at this time. Both *A. nesophila* and *A. pellita* have probably evolved from *A. holosericea.*

81. ***A. grandifolia** Pedley. **Type:** Burnett District: 34 miles [54 km] about S of Mundubbera, Sep 1969, *Pedley* 2891 (BRI, holo; A, CANB, K, NSW, iso).

Tree to *ca* 8 m tall; branchlets stout angular with dense whitish indumentum of erect hairs 0·2–0·4 mm long (velutinous), extending to pulvinuses and peduncles. Phyllodes ± straight asymmetrically elliptic, 9–15 cm long, 2·5–5 cm wide, *ca* 3–4 times as long as wide, up to 7·5 cm wide and twice as long as wide on young plants, with indumentum of spreading hairs; 3(–4) longitudinal nerves more prominent than the rest, the secondary nerves widely spaced, strongly anastomosing; gland basal, large; pulvinus 6–10 mm long. Spikes dense, on thick velvety peduncles 5–8 mm long in pairs in the upper axils. Flowers 5–merous; calyx somewhat coarse, patelliform, 0·7–0·9 mm long, pilose, sometimes only in the upper half or on the margins; corolla (2–)2·5 mm long; ovary pubescent. Pods tomentose, flat, 6 cm long, 6 mm wide; seeds longitudinal shining, *ca* 4 × 2 mm, rather thick; areole elongate, open; funicle pale yellow, folded several times beneath the seed.

Burnett District: 8 miles [12 km] E of Gayndah, 25°37'S 151°34'E, Sep 1969, *Pedley* 2897.

Acacia grandifolia is an uncommon species. In the type locality it forms open stands on sand among large sandstone boulders but in the only other locality where it is known to occur it is found on shallow soils derived from basalt. Flowers have been collected in September and mature pods in November.

The position of the species is uncertain. It falls between Bentham's Falcatae and Dimidiatae groups of *Juliflorae*. Its nearest relative is probably *A. holosericea* which has less elongate vein-islands, pubescent corollas and more elongate pods, but it also resembles *A. longispictata* subsp. *velutina* and *A. crassa* subsp. *longicoma,* both of which have indumentum of spreading hairs on the branchlets but with mature phyllodes glabrous with less anastomosing nerves. *A. grandiflora* does not appear to be sympatric with any of the apparently related species of the Falcatae group. It lies between the known occurrences of *A. longispicata* subsp. *longispicata* to the west and *A. longispicata* subsp. *velutina*

***A. grandifolia** Pedley, sp. nov. affinis *A. holosericeae* A. Cunn. ex G. Don phyllodiis areolis elongatioribus praeditis, corollis glabris, leguminibus pubescentibus ± rectis differt. Ab *A. longispicata* Benth., *A. crassa* Pedley et speciebus ceteris catervae Falcatae phyllodiis minus elongatis nervis minus anastomosantibus praeditis differt. Typus: *Pedley* 2891 (BRI, holotypus; A, CANB, K, NSW, isotypi).

Arbor usque 8 m alta; ramuli crassi angulares indumento albido pilorum erectorum 0·2–0·4 mm longorum (velutini) obtecti, indumento ad pulvinos pedunculosque extenso. Phyllodia ± recta, asymmetrice elliptica, indumento pilorum patentium obtecta, 9–15 cm longa, 2·5–5 cm lata, circa 3–4–plo longiora quam lata, in plantis juvenibus usque 7·5 cm lata et 2–plo longiora quam lata; 3(–4) nervi longitudinales quam ceteri prominentiores, nervi secundarii late dispositi, valde anastomantes; glans basalis magna; pulvinus 6–10 mm longus. Spicae densae 6–8 cm longae in pedunculis crassis velutinis 5–8 mm longis in axillis binatim portatae. Flores 5–meri; calyx aliquantum crassus patelliformis 0·7–0·9 mm longus pubescens pilis longis, interdum non nisi in dimidio supero vel in margine obsitus; corolla (2–)2·5 mm longa; ovarium pubescens. Legumen tomentosum ± planum, 6 cm longum, 6 mm latum. Semina longitudinalia nitida circa 4 mm × 2 mm aliquantum crassum; areola elongata aperta; funiculus pallide flavus subter seminum compluries plicatus.

to the east, and *A. crassa* subsp. *longicoma* (north and west) and *A. crassa* subsp. *crassa* (south and west). More detailed field studies are needed to clarify relationships of these taxa.

82. Acacia dimidiata Benth., London J. Bot. 1:381 (1842). Based on *A. dolabriformis* A. Cunn. ex Hook., Icon. Plant. t. 169 (1837) non Wendl. (1820) nec Colla (1824). **Type:** South Goulburn I., Aug $\frac{406}{1819}$ *Cunningham* (K; BM, iso; lectotypus novus).

Shrub to *ca* 5 m tall; branchlets yellowish, ± angular, with dense indumentum of crisped hairs *ca* 0·15 mm long. Phyllodes coriaceous, 7–9 cm long, 4–6 cm wide, 1·7–1·9 times as long as wide; lower margin ± straight, upper curved, abruptly contracted at base into pulvinus 8–12 mm long; margins and four longitudinal nerves prominent, the lowest ending in a mucro, the others in shallow sinuses on upper margin, all running into lower margin near the base; secondary nerves forming fine reticulum; gland basal, with prominent, slightly raised rim. Spikes dense, *ca* 4 cm long, on densely pubescent, axillary peduncles *ca* 6 mm long. Flowers 5–merous; calyx 0·7 mm long with lobes 0·3 mm long, membranous with long hairs on the margins; corolla 1·8 mm long lobed to about half, glabrous; stamens 3·5 mm long; ovary densely pubescent. Pods up to 13 cm long, 4 mm thick and about as broad, only slightly constricted between the seeds, longitudinally wrinkled, glutinous, pubescent. Seeds longitudinal, thicker than broad, 7·5 mm long, 2 mm wide, 3 mm thick, areole large, open, aril cupular.

BURKE DISTRICT: Settlement Creek, Aug 1922, *Brass* 204.

In Queensland *A. dimidiata* is confined to the extreme north-west. It extends across the Northern Territory where it is found on sandy or gravelly soil often in *Eucalyptus tetrodonta* woodland. It flowers usually from April to June and pods mature in August and September.

83. Acacia humifusa A. Cunn. ex Benth., London J. Bot. 1:382 (1842). **Syntype:** Cape Cleveland, June $\frac{320}{1819}$, *Cunningham* (K; BM, iso).

Spreading shrub up to *ca* 1 m tall, sometimes almost prostrate; branchlets terete, tomentose or hirsute, hairs 0·4–0·8 mm long; stipules rather hard, straight, linear, hirsute up to 6 mm long, sometimes persistent. Phyllodes tomentose, asymmetrical, the lower margin ± straight, the upper strongly curved, 4–6·5 cm long, 2·5–5 cm wide, 1·2–2 times as long as wide, occasionally young phyllodes *ca* 1·5 cm wide and 3–4 times as long as wide; 2 or 3 longitudinal nerves prominent, the lowest reaching the obtuse, retuse or, rarely acute tip and produced into a scarious deciduous mucro 2–3 mm long, the other longitudinal nerves curved towards the upper margin; secondary nerves strongly reticulate; gland basal, prominent, circular, with a smooth yellowish rim; pulvinus 4–6 cm long. Spikes dense, 1·5–3 cm long on peduncles 2–4 mm long usually single in the upper axils, peduncle and rachis tomentose. Flowers rather variable in size, 5(–6)–merous, subtended by concave bracteoles, 2–3 mm long, hirsute on lower surface, smooth and brown above, projecting beyond flower buds and conspicuous in young spikes; calyx (0·9–)1·2–1·8 mm long, hirsute with acute lobes 0·4 mm long with broad sinuses between them; corolla hirsute in upper half, 1·6–2·3 mm long, 1·2–1·8 times as long as the calyx; stamens *ca* 4 mm long; ovary hirsute. Pods linear, straight, rather thick, hirsute. Seeds longitudinal, 5–6 mm long, 2·5–3 mm wide, 2·2–2·4 mm thick; areole elongate, open; funicle folded and expanded into cupular aril beneath seed.

COOK DISTRICT: near Cape Bedford, 15°19′S 145°17′E, Jan 1968, *Pedley* 2618. NORTH KENNEDY DISTRICT: *ca* 37 km SW of Mt Garnet, 17°55′S 144°53′E, Apr 1973, *Henderson* H1694.

In Queensland *A. humifusa* extends from Cape York to Cape Cleveland, usually within 100 km of the sea. It is found on shallow rocky soil in eucalypt communities and on sand in heath or on sea shores. In situations where it is exposed to strong winds it is often almost prostrate. Flowers and mature fruit may be found at any time of the year. Phyllodes of *A. humifusa* and *A. dimidiata* are similar, but the projecting bracteoles and hirsute corolla distinguish *A. humifusa*.

PLURINERVES (Benth.) Maiden & Betche

Phyllodes flat, occasionally terete, rarely triangular and pungently pointed, but always longitudinally nerved or striate. Flowers arranged in heads on peduncles in pairs or clusters, or in racemes in the upper axils. Type species: *A. melanoxylon* R. Br.

84. Acacia rigens A. Cunn. ex G. Don, Gen. Syst. 2:403 (1832); Benth., London J. Bot. 1:342 (1842), Fl. Aust. 3:337 (1864). **Type:** Lachlan River, June $\frac{400}{1819}$, *Cunningham* (K, holo; BM, iso).

A. chordophylla F. Muell. ex Benth., Linnaea 26:612 (1855). **Type:** Ad Flum. Murray, Oct 1848, *Mueller* (MEL 500636; K, BM; lectotypus novus).

Shrub to 2 m; branchlets with prominent yellowish ribs, but not angular, somewhat resinous. Phyllodes glabrous except perhaps at the base, straight, terete or slightly flattened, finely striate with *ca* 15 yellowish longitudinal nerves, 5–13 cm long, up to about 1 mm diameter, with an innocuous point at the apex, contracted into a pulvinus *ca* 1·5 mm long; a gland at the base. Flowers 5–merous in 20–30 flowered heads on slightly hoary peduncles 3·5–5·5 mm long, single or in pairs in the upper axils; bracts ± flat triangular. Flowers 5–merous; calyx rather stout, 1·2 mm long, with oblong lobes slightly flared at the ciliate apex, 0·5 mm wide; corolla glabrous, 2–2·2 mm long, divided to the base; stamens *ca* 5 mm long; ovary hoary. Pods linear 2–3 mm broad, loosely coiled, the valves rugose constricted between the seeds. Seeds longitudinal, rather pale brown, 3–3·5 mm long, 1·8 mm broad and about as thick; areole large open; an unusual funicle embracing base of seed.

WARREGO DISTRICT: 27 miles [43 km] from Cunnamulla on Bollon Road, Sep 1967, *Pedley* 2724. MARANOA DISTRICT: "Portland", 26°48'S 146°30'E, Aug 1963, *Ebersohn.* DARLING DOWNS DISTRICT: 12 miles [19 km] ENE of Tara, Jan 1968, *Pedley* 2513.

Acacia rigens is widespread in inland parts of south-eastern Australia but in Queensland it is known only from a few, rather widely separated, localities in southern inland districts—south-east of Charleville, east of Cunnamulla, and near Tara. It forms a heathy shrub layer in eucalypt woodland, usually on rather loose sand. It flowers in August and September. The Tara plants have rather longer and more slender phyllodes than the plants from farther inland.

Several species are represented on the two sheets segregated as the type of *A. rigens* in herb. Kew. There are two specimens of *A. rigens;* one on the lower left hand corner of one sheet immediately above the label which identifies the specimen as Cunningham's collection; the other in the middle of the second sheet (ex Herbaria Hookeriano). The former is plainly labelled and should be regarded as the holotype. The other two specimens on the first sheet belong to *A. elongata* Sieb. ex DC. On the second sheet the specimen to the left of the one of *A. rigens* should also be referred to *A. elongata* and the one to the right to *A. havilandii* Maiden. The isotype at BM is free of extraneous material.

The affinities of *A. rigens* are with the two species with which it is mixed on the sheets mentioned above. *A. elongata* has flat strongly nerved phyllodes, and *A. havilandii* has shorter brittle phyllodes.

85. Acacia oswaldii F. Muell., Pl. Vict. 2:27 (1863); Benth., Linnaea 26:609 (1855), *pro syn.* **Type:** Murray Desert in South Australia, *Mueller* (MEL, holo).

A. amaliae Domin, Biblioth. Bot. 89:249 (1926). **Type:** *Dietrich* s.n. (PR, holo).

A. amaliae Domin var. *orthophylla* Domin, loc. cit. **Syntypes:** in collibus Dividing Range dictis, apud opp. Jericho, Mar 1910, *Domin* "5402" & "5404" (PR).

A dense rounded shrub or small tree to 5 m tall; branchlets terete or somewhat angular, scurfy and with sparse to moderately dense appressed pubescence, stipules small, setaceous, deciduous. Phyllodes stiff, coriaceous, glabrous, obtuse with a hard mucro, subsessile (3·5–)4–6(–7) cm long, 3–10(–15) mm wide, 5–13(–17) times as long as wide or in some specimens mostly from the Georgina basin, 1–2 mm wide and up to 50 times as long as wide, about 10–15 prominent, equally and widely spaced, longitudinal nerves, as few as 6 when phyllodes are narrow; gland basal, prominent, up to 2·5 mm long, rimmed, darker inside. Heads of 5–15 flowers in pairs in the axils, peduncles scurfy or appressed pubescent; bracteoles concave, obovate, pubescent on the back. Flowers 5–6 merous; calyx lobes free (0·7–)0·9–1·1 mm long, *ca* 0·3 mm broad, slightly pubescent at top; corolla lobes free (1·2–)1·6–1·7 mm long, 1·5–2 times as long as the calyx, acute, glabrous; stamens 2·5–4 mm long; ovary densely appressed pubescent. Pod woody, linear 4–17 cm long, 6–10 mm wide, loosely coiled somewhat torulose, hard; seeds longitudinal, 7–8 mm long, 6–7 mm wide, *ca* 3·5 mm thick; areole oblong open; funicle fleshy orange, forming a cup beneath the seed.

NORTH KENNEDY DISTRICT: Pentland, Oct 1935, *Blake* 9950. GREGORY NORTH DISTRICT: Georgina River, Sep 1910, *Bick*. MITCHELL DISTRICT: Blackall, Jul 1934, *Blake* 6752. SOUTH KENNEDY DISTRICT: 8 miles [13 km] W of "Avoca", Sep 1964, *Adams* 1312 & 1313. LEICHHARDT DISTRICT: Blair Athol, Mar 1935, *Blake* 8081. PORT CURTIS DISTRICT: Biloela, Oct 1947, *Smith* 3479. GREGORY SOUTH DISTRICT: Near Windorah, Jul 1936, *Blake* 12076. WARREGO DISTRICT: "Waihora" 16 miles [26 km] ESE of Eulo, Oct 1948, *Everist* 3585. MARANOA DISTRICT: Roma, May 1934, *Blake* 5821. DARLING DOWNS DISTRICT: "Myall Park", N of Glenmorgan, Nov 1958, *Johnson* 626.

In Queensland, *Acacia oswaldii* is widely spread in inland sub-tropical areas and extends through subcoastal districts to Pentland. There are also several specimens with rather narrow phyllodes from the Georgina River. *A. oswaldii* appears to be commonest in *Eucalyptus populnea—Eremophila mitchellii* communities but also occurs on soil types ranging from deep sands in the south-west to cracking clays with *Acacia harpophylla, Eucalyptus microtheca* and occasionally grassland in central and southern Queensland. Pale, scented flowers are produced, usually in October and November. Pods mature about two months after flowering but the woody dehisced valves persist on the plant for a considerable period.

Acacia sessiliceps may be no more than a narrow-phylloded variant of *A. oswaldii* common in the Northern Territory. The specimens from the Georgina River referred to above, resemble specimens from the Northern Territory more than they do specimens from other parts of Queensland and could be regarded as intermediates between the two species. They may indicate a pattern of variation within the species analogous to that found in *A. bivenosa* subsp. *wayi*.

Domin's collections indicate that his application of the name *A. oswaldii* was incorrect. Not only did he describe what are, at most, only minor variants of *A. oswaldii* as *A. amaliae* and *A. amaliae* var. *orthophylla,* he also identified as *A. oswaldii* a specimen (Mt Remarkable, *Domin* "5317") which is a mixture of sterile pieces of *A. leptostachya* and, probably, *A. catenulata.*

The spelling *A. osswaldii* used by Mueller (Icon. Aust. Sp. *Acacia*) and others is incorrect. In the protologue Mueller used the name *A. oswaldii* and stated that the species was named in acknowledgement of contributions to collections made by Mr Ferd. Oswald.

A. oswaldii is not particularly closely related to any other species but its affinities are with *A. elongata, A. lanigera* and *A. venulosa,* rather than to the Microneurae group of species, where it was placed by Bentham. Bentham referred *A. oswaldii* to *A. lanigera* and Domin also compared *A. amaliae* to this species.

86. Acacia nuperrima E. G. Baker, J. Bot. 64:92 (1926). **Type:** Groote Eylandt, Feb 1925, *Wilkins* 101 (BM, holo).

A. translucens A. Cunn. ex Hook. var. *angusta* Domin, Biblioth. Bot. 89:259 (1926). **Type:** Carpentaria, Islands a, b & c [South Wellesley Islands], *Brown* '4285' (BM, K).

Densely branched spreading shrub to 1 m tall, glabrous and rather resinous; branchlets prominently ribbed, glabrous and somewhat resinous, occasionally punctulate; stipules narrowly triangular *ca* 0·5 mm long. Phyllodes glabrous, broadest in the lower half, downcurved or sigmoid, 10–20 mm long, 2–5 mm wide, 2·5–7(–14) times as long as wide, nerves obscure or 1–3 longitudinal nerves prominent and sometimes less prominent longitudinal ones between them; oblique mucro; gland small, subbasal; pulvinus short. Inflorescence either a 10–20 flowered head or a dense spike to 2 cm long, on glabrous peduncles (5–)8–18 mm long single in the axils. Flowers 5–merous; calyx glabrous, not prominently ribbed, 0·7–1 mm long, with lobes to 0·2 mm long; corolla 1·4–2 mm long, with midrib prominent in the bud, 1·7–2·3 times as long as the calyx; stamens 3–4 mm long; ovary glabrous, resinous. Pods narrowly triangular, opening elastically from the apex, 3–5 cm long, 4–6 mm wide, valves rather woody, partitioned between the seeds. Seeds oblique, oblong in outline, 3–6 mm long, 1·3–2·4 mm wide; areole rather large, open, the pleurogram pale; funicle stiff expanded into cupular aril.

86a. A. nuperrima subsp. **nuperrima**

Flowers in heads.

BURKE DISTRICT: Massacre Inlet, Aug 1922, *Brass* 202.

86b. *A. nuperrima subsp. **cassitera** Pedley

Type: Cook District: Koorboora, 17°22′S 144°58′E, Dec 1970, *A. Macdonald* (BRI, holo)

Inflorescence a spike, sometimes, on the same plant, reduced to a head. (Fig. 9g, inflorescence).

COOK DISTRICT: Emuford near Irvinebank, Dec 1940, *Flecker* Nth Qd Nat. Club No. 7137. NORTH KENNEDY DISTRICT: 5·6 km N of Ravenshoe, 17°36′S 145°18′E, Sep 1974, *Staples* 290974/6.

***A. nuperrima** subsp. **cassitera** Pedley, subsp. nov.
Inflorescentia floribus in spicas disposita, interdum in eadem planta in capitula reducta. **Typus:** *Macdonald* s.n. (BRI, holotypus).

The species ranges from the northern part of Western Australia to north-eastern Queensland. *A. nuperrima* subsp. *cassitera* is confined to rugged mineraliferous country in the Chillagoe–Herberton area, while the nominate subspecies extends westward from the Wellesley Islands. There is a disjunction of about 500 km between the two subspecies. Flowering and fruiting specimens have been collected throughout the year.

The addition of a subspecies with spicate inflorescences might appear to widen the circumscription of *A. nuperrima* to an unacceptable extent, particularly as the character of the inflorescence distinguishes section *Juliflorae* from section *Plurinerves,* but the two subspecies are indistinguishable in characters of the foliage, flowers and pods. Bentham who included *A. nuperrima* in *A. translucens* (Flora Australiensis) noted in his description of *A. translucens* that "the pod is that of some Julifloraе". The two species are closely related, the most obvious difference being the larger flowers and flower-heads of *A. translucens,* and both are related to *A. wickhamii.*

87. Acacia phlebocarpa F. Muell. ex Benth., Fl. Aust. 2:325 (1864); F. Muell., J. Proc. Linn. Soc. Bot. 3:119 (1859), *pro syn.* **Type:** Seven Emu River, *Mueller* 41 (K, iso).

Misapplied name: *A. ixophylla* auct. non Benth.; Domin, Biblioth. Bot. 89:262 (1926).

Spreading resinous flat-topped shrub to 1 m tall; branchlets resinous with corky ribs, glabrous or with golden hairs immersed in resin; stipules brown, deltoid, *ca* 1 mm long, 0·6–0·8 mm broad. Phyllodes punctulate, resinous, with scattered long hairs or glabrous, linear or narrowly elliptic, contracted into an innocuous brown point (2–)2·5–4·5(–5·5) cm long, 3–9 mm wide, 3–11(–17) times as long as wide; about 12 ± prominent longitudinal nerves, one most prominent and two others slightly less so; gland basal, not prominent; pulvinus *ca* 1 mm long. Heads of 30–50 longitudinally striate 5–merous flowers on resinous axillary peduncles 1–2 cm long; bracteoles broad, concave, acuminate at the apex; calyx 0·9–1·0(–1·3) mm long, striate glabrous with oblong obtuse lobes 0·4–0·5 mm long; corolla (1·8–)2–2·4 mm long, 2–2·5 times as long as the calyx, glabrous, striate; stamens 3·5–4·5 mm long; ovary with moderately dense short thick hairs (almost papillose). Pod *ca* 5 cm long, 4 mm broad, brown with paler margins, longitudinally reticulately nerved, resinous, with minute tubercles except on nerves and margins, raised over seeds and slightly contracted between them; seeds longitudinal 4 mm long, 3 mm wide; areole double, closed, almost circular.

BURKE DISTRICT: 53 km E of Mt Isa, Aug 1972, *Maconochie* 1940. COOK DISTRICT: Gilbert River, Jul 1925, *Brass* 404.

Acacia phlebocarpa is a common and conspicuous shrub in a relatively small part of north-western Queensland. It is found on rather shallow stony soils on hillsides with *Triodia* spp. and/or *Eucalyptus pruinosa.* It seems to flower and fruit throughout the year.

The species most closely related to *A. phlebocarpa* appears to be *A. monticola* which not only has similar phyllodes but also has striate flowers and a closed areole, both uncommon characters. Bentham's placing *A. phlebocarpa* in his series *Pungentes* is difficult to understand as the phyllodes are not at all pungently pointed. It and *A. monticola* quite clearly belong to the section *Plurinerves.*

88. Acacia harpophylla F. Muell. ex Benth., Fl. Aust. 2:389 (1864); F. Muell., Icon. Aust. Sp. Acacia (1888). **Type:** Rockhampton, *Thozet* (K, holo; MEL, iso).

Tree to 25 m tall with hard, almost black, deeply longitudinally furrowed bark; branchlets ribbed. Phyllodes falcate, equally tapered to each end, glabrous or with indumentum of short appressed hairs, (7–)10–20(–30) cm long, (5–)7–16(–20) mm wide, 5–16(–20) times as long as wide; many crowded parallel nerves, not anastomosing, 3–5 somewhat more prominent than the rest; basal gland prominent; pulvinus long. Heads of 15–30 flowers in condensed 3–8 branched appressed pubescent axillary racemes, the axis 2–10 mm long, peduncles (3–)10–20(–30) mm long. Flowers 5-merous; calyx 0·5–1 mm long, lobes ± free, ciliate and often tomentose towards the top; corolla lobes obovate, glabrous, free, 1·5–2 mm long, 2–3 times as long as the calyx; stamens 3–4 mm long; ovary tomentose. Pods 7–20 cm long, 5–10 mm wide, glabrous, subterete. Seeds longitudinal, 12–18 mm long, 5–8 mm wide, flat but thick, somewhat irregular in shape due to compression within the pod; funicle filiform, neither folded nor thickened; areole (as figured by Mueller), small, oblong, but not seen at all in dry seeds examined. (Fig. 9e, inflorescence).

BURKE DISTRICT: 21 miles [34 km] W of Hughenden, *Birch & Corell.* SOUTH KENNEDY DISTRICT: On highway 86 miles [138 km] N of Clermont, Jul 1964, *Adams* 1038. LEICHHARDT DISTRICT: "Thalmera North", 30 miles [48 km] W of Moura, Aug 1962, *Johnson & Everist* 2456. PORT CURTIS DISTRICT: Rockhampton, Aug 1957, *Jones.* WARREGO DISTRICT: Augathella, Sep 1937, *Brass & White* 345. MARANOA DISTRICT: Amby, Sep 1961, *Martin.* DARLING DOWNS DISTRICT: 9 miles [14 km] W of Meandarra, Nov 1958, *Johnson* 607. BURNETT DISTRICT: 14 miles [22 km] SSE of Monto, Aug 1969, *Pedley* 2882. MORETON DISTRICT: 5 miles [8 km] NNW of Boonah, Aug 1969, *Coveny* 1952.

Acacia harpophylla (brigalow) is of major importance in Queensland. It forms extensive open-forest communities usually on fertile clay soils in sub-coastal and near-coastal districts as far north as Hughenden. Brigalow lands are highly productive when cleared, but regrowth from roots, a characteristic of the plant, is a definite limiting factor in the exploitation of such lands. The distribution and ecology of *A. harpophylla* have been discussed by Johnson (1964); Isbell (1962) described soils on which brigalow grows; and Coaldrake (1971) analysed variation within the species. The last study was probably undertaken because of the economic importance of the species rather than because of its range of variability which is probably no greater than other widespread species of *Acacia*.

The main period of flowering is between July and September. It is partly dependent on the availability of adequate soil-moisture. Mature fruit have been collected in November and December. The seeds have remarkably thin coats and unlike seeds of most other species, are viable for a short period only.

Bentham placed *A. harpophylla* next to *A. implexa* in the Nervosae group of section *Plurinerves* but it belongs to the Microneura group where Bentham also keyed it. Its closest relative is *A. cambagei.*

89. Acacia argyrodendron Domin, Biblioth. Bot. 29:261 (1926). **Type:** inter opp. Camooweal et Burketown, Apr 1910, *Danes* (PR, holo).

Tree to *ca* 20 m tall with hard furrowed dark grey or black bark, like that of *A. harpophylla;* branchlets rather slender, glabrous or subglabrous. Phyllodes straight, occasionally slightly falcate, linear, acute, rather coriaceous with 1–3 somewhat prominent longitudinal nerves and many parallel, not anastomosing,

secondary nerves, glabrous or subglabrous, 8–17 cm long, 4–9 mm wide, 12–30 times as long as wide. Heads of about 12 flowers in axillary racemes with up to about 30 branches axis and branches subglabrous; axis up to 5 cm long, peduncles up to 1 cm long, single or in groups of 2 or 3. Flowers 4– or 5–merous; calyx 0·5 mm long ciliate or glabrous, divided almost to the base into obtuse lobes; corolla 1·2 mm long, glabrous, divided almost to the base; stamens *ca* 3 mm long; ovary glabrous. Pod linear, with thin glabrous valves up to 10 cm long and 10–12 mm broad. Seeds longitudinally arranged, overlapping in the pod, thin broad oblong, almost circular, 10–13 mm long, 7–9 mm broad; funicle slender, not folded; areole not obvious.

MITCHELL DISTRICT: 60 miles [96 km] N of Aramac, Jun 1949, *Everist* 3844. SOUTH KENNEDY DISTRICT: 10 miles [16 km] NE of "Natal Downs", May 1964, *Adams* 979. LEICHHARDT DISTRICT: "Carfax", 75 miles [120 km] W of St Lawrence, May 1963, *Pownall*.

In central Queensland *Acacia argyrodendron* is common particularly in the basins of the Belyando, Suttor and Cape Rivers, where it is known as blackwood, and the adjacent western slopes of the Great Dividing Range, where it is called black gidyea. It is similar to *A. harpopylla* in general appearance and occupies similar habitats. It forms scrubs on dark cracking clay soils, either alone or, on the southern and eastern edge of its range, with brigalow, and is occasionally associated with *A. harpophylla* with emergent *Eucalyptus cambageana* on texture-contrast soils. Gunn *et. al.* (1967) gave information on plant communities and associated soils in which *A. argyrodendron* occurs.

The species most closely related to *A. argyrodendron* is possibly *A. cana*, though Domin compared it with *A. stenophylla* and *A. pendula*. It differs from them in having few-flowered heads in rather long racemes. The type is a specimen supposedly collected between Camooweal and Burketown by Danes, a Czechoslovak geologist who was in Queensland at the same time as Domin. Despite extensive collecting in the area, *A. argyrodendron* has not been recorded from north-western Queensland since, and it is unlikely that the type was collected there. Danes, however, travelled between Aramac and Pentland (Danes, 1910). A little north-east of Aramac he reported open forest, "consisting mostly of so-called black brigalow (black gidyea)". It is likely that he gave material to Domin who cited the place of collection incorrectly. The holotype is labelled "*A. argyrophylla*".

90. Acacia coriacea DC., Prod. 2:451 (1825); Mem. Leg. 446 (1827). **Type:** Nouvelle Hollande cote orient. Mus. de Paris 1821 (G-DC, holo; K, P, iso).

A. sericophylla F. Muell., J. Proc. Linn. Soc. Bot. 3:122 (1859). **Type:** Suttor Desert, *Mueller* (K, iso).

An irregular tree up to *ca* 10 m tall with grey furrowed corky bark; branchlets ± angular with indumentum of moderate or dense appressed hairs. Phyllodes thick, almost terete or flat (sometimes on the one plant), straight or curved with indumentum of dense silvery hairs (golden on tips), subglabrous when old; (11–)5–25(–32) cm long, (0·8–)1–3(–6) mm wide, (20–)50–100(–350) times as long as wide; many fine parallel indistinct longitudinal nerves; pulvinus indistinct; gland with a prominent orifice 0·3 mm diam. at the base. Heads of 30–40 flowers on densely pubescent peduncles 5–10 mm long in axillary pairs, rarely up to 5 heads in an axillary raceme, the axis 1 cm long. Flowers 5–, rarely 4–merous; calyx rather thick pubescent, 1·3–1·6 mm long with somewhat irregular fimbriate lobes 0·2–0·4 mm long; corolla 1·9–2·7 mm long, 1·5–2 times as long as the calyx, the lobes 0·7–0·8 mm long, sparsely to densely

pubescent; stamens 2·5–3·5 mm long; ovary sparsely to densely pubescent particularly at the top (rudimentary ones glabrous). Pods rather woody, twisted, torulose, grey with usually some appressed hairs, 15–21 cm long, 6–8 mm broad, but only half as broad at the constrictions. Seeds longitudinal 6 mm long, *ca* 4·5 mm wide and 2·5 mm thick; areole broad open, pale slightly raised; funicle clavate beneath seed. (Fig. 10g, pod).

BURKE DISTRICT: 20 miles [32 km] E of Hughenden, Jun 1954, *Speck* 4527. NORTH KENNEDY DISTRICT: Ravenswood, Mar 1943, *Blake* 14849. GREGORY NORTH DISTRICT: 24 miles [38 km] E of Urandangie, May 1948, *Perry* 826. MITCHELL DISTRICT: Yalleroi, May 1937, *Everist* 1502. GREGORY SOUTH DISTRICT: 11 miles [18 km] N of "Galway Downs", Jun 1969, *Trapnell* E61. WARREGO DISTRICT: near Cunnamulla, Mar 1941, *White* 11822.

Acacia coriacea is widely spread in northern Australia. In Queensland where it is known as desert oak it is common in eucalypt woodland on sandy red earths in the "desert country" which extends from about Torrens Creek southward along the western side of the Great Dividing Range to about north-east of Blackall; that is, the area called the Alice Tableland by Whitehouse (1941). It has also been collected at other places in the north-, central- and south-west. Flowers have been collected from January to July and fruits from May to November.

There is a wide range of variation in the width of the phyllodes within populations and sometimes on single plants. I doubt therefore whether *A. coriacea* var. *glabrior* Maiden has any taxonomic significance.

As Maiden noted the type locality is not eastern Australia but Western Australia where the plant was collected by Baudin's expedition, probably in the vicinity of Shark Bay. What I have taken to be isotype specimens at K and P have labels indicating they were collected in Western Australia.

A. coriacea and *A. stenophylla* which it closely resembles, are rather unlike other members of the Microneurae group to which they have usually been referred.

91. Acacia stenophylla A. Cunn. ex Benth., London J. Bot 1:356 (1842). **Type:** Lachlan River, Jun $\frac{432}{1817}$, *Cunningham* (K, holo; BM, iso).

Tree to 6 m with hard black bark; branchlets angular, glabrous to densely appressed pubescent. Phyllodes coriaceous, straight or sometimes curved, acute, gradually tapered to the base which is as thick as broad, 15–24(–27) cm long, (1·5–)2–5(–7) mm wide, 30–80(–120) times as long as wide, with prominent rather widely spaced longitudinal nerves, the middle one slightly more prominent; gland merely an orifice at the base, not always evident. Heads of (20–)30–40 flowers in 3–5 branched racemes; axis 3–5(–9) mm long, moderately to densely appressed pubescent or rarely glabrous; peduncles 6–8 mm long with indumentum similar to that of axis. Flowers 5–merous; calyx 1–1·2(–1·5) mm long, densely pubescent in the upper part with obtuse lobes 0·2–0·3 mm long; corolla 2·1–2·5 mm long, 1·7–2 times as long as the calyx, densely white pubescent in the upper half, lobed to about the middle; stamens 4·5 mm long; ovary densely white pubescent. Pod moniliform, up to 14 cm long, *ca* 1 cm wide, 1·5–3 mm wide at the constrictions, glabrous, obscurely longitudinally wrinkled. Seeds longitudinal *ca* 7 mm long, 5–6 mm wide, 2·5–3 mm thick; areole large, open or almost closed; funicle ribbon-like, not or little folded. (Fig. 10h, pod).

BURKE DISTRICT: Julia Creek, Jun 1934, *Blake* 6344. GREGORY NORTH DISTRICT: 15 miles [24 km] NW of "Headingly", May 1948, *Perry* 864. MITCHELL DISTRICT: Aramac, Mar 1918, *White*. SOUTH KENNEDY DISTRICT: "Laglan", 22°30'S 146°40'E, Mar 1958, *Smith* 10309. LEICHHARDT DISTRICT: Baralaba, Nov 1954, *Richard*. GREGORY SOUTH DISTRICT: "Mt Howitt", Cooper Creek, Jul 1936, *Blake* 12018. WARREGO DISTRICT: Cunnamulla, Apr 1936, *Blake* 11210. MARANOA DISTRICT: Mungallala Creek near Bollon, Apr 1952, *sine coll.* DARLING DOWNS DISTRICT: Wilkie Creek, *ca* 10 miles [16 km] W of Dalby, Oct 1940, *Smith & Everist* 812.

Acacia stenophylla is widely distributed in inland Queensland, south of about 20°S latitude, usually west of the Great Diving Range, but approaching the coast on the Dawson River. A specimen was supposedly collected at Beaudesert in 1955, about 160 km east of its nearest known occurrence on the Condamine River, and in an area of higher rainfall. Until confirmatory specimens are obtained the record should be considered doubtful. The species is restricted to usually fine textured alluvial soils often in association with *Eucalyptus microtheca* (coolibah). In semi-arid areas it frequently forms monospecific stands along watercourses. Observations at Lake Gallilee and Lake Numalla (near Hungerford) indicate that it tolerates extended periods of inundation by water that may be at times somewhat saline.

April to July appears to be the main period of flowering and pods mature from October to about December. The pods dehisce rather tardily and tend to break up into 1-seeded loments.

A. stenophylla is sometimes confused with *A. coriacea*, but, besides the differences in ecological requirements, there are morphological differences. *A. stenophylla* has more prominent and more widely spaced longitudinal nerves, more consistently racemose heads and woodier pods.

92. *Acacia microcephala Pedley. **Type:** "Corinda", *ca* 80 miles [130 km] N of Aramac, Jun 1949, *Everist* 3869 (BRI, holo; NSW, iso).

A tree to 8 m; branchlets slender angular somewhat scurfy and with sparse to moderate appressed hairs. Phyllodes coriaceous, linear, straight or slightly hooked, with sparse to moderate appressed pubescence, 5–10 cm long, 1–2 mm wide, 40–100 times as long as wide; longitudinal nerves indistinct, only *ca* 6 evident; gland basal inconspicuous; pulvinus short. Heads of 10–20 flowers in 2–3 branched, sparsely to moderately appressed pubescent racemes, axis 1–2 mm long, peduncles 2–4 mm long; bracteole, broad, spathulate, obtuse, concave, pubescent at the top. Flowers 5–merous; calyx 0·4–0·6 mm long with incurved pubescent lobes and with a few hairs on the ribs; corolla 1·1–1·2 mm long, 2–3 times as long as the calyx; stamens 2–3 mm long; ovary glabrous. Pods unknown.

MITCHELL DISTRICT: 17 miles [27 km] N of "Fleetwood", Aug 1964, *Adams* 1232 (sterile).

***Acacia microcephala** species nova; ab *A. cana* Maiden et *A. calcicola* Forde & Ising phyllodiis tenuioribus et capitulis parvioribus differt. **Typus:** *Everist* 3869 (BRI, holo; NSW, iso).

Arbor usque 8 m alta; ramuli angulares aliquantum furfuracei et pilis appressis sparsis vel moderate densis ornati. Phyllodia coriacea linearia recta vel leviter uncinata sparse vel moderate pubescentia, 5–10 cm longa, 1–2 mm lata, 40–100–plo longiora quam lata; nervi longitudinales indistincti non nisi circa 6 manifesti; glans basalis obscura; pulvinus brevis. Capitula 10–20–flora in racemos plerumque 3–ramosos sparse ad moderate pubescentes, axe 1–2 mm longo, pedunculis 2–4 mm longis instructos disposita; bracteolus latus spathulatus obtusus concavus apice pubescens. Flores 5–meri; calyx 0·4–0·6 mm longus lobis incurvis pubescentibus et pilis paucis in costis instructus; corolla 1·1–1·2 mm longa calyce 2–3–plo longior; stamina 2–3 mm longa; ovarium glabrum. Legumen non visum.

Only three specimens of *A. microcephala,* one of them sterile, have been examined, all from the vicinity of Lake Galilee. It has been noted with *Eucalyptus cambageana* in an alkaline clay soil. The affinities of the species are with *A. cana* and *A. calcicola* but it has narrower phyllodes and smaller heads than both.

93. *Acacia maranoensis Pedley. **Type:** 50 km SSW of Roma, Sep 1967, *Pedley* 2410 (BRI, holo; A, CANB, K, L, MO, NSW, PR, LE, RSA, iso).

Tree up to about 10 m tall with dark furrowed bark; branchlets yellowish, angular, scurfy. Phyllodes coriaceous, scurfy when young, straight, linear, acute occasionally slightly hooked, 11–15(–20) cm long, 4–7 mm broad, 16–30(–40) times as long as broad, closely indistinctly longitudinally nerved, 1–3 nerves slightly more prominent than the rest; gland basal, not conspicuous; pulvinus 1–2 mm long. Heads slightly elongate of 30–60 flowers in 3–6 branched axillary racemes, axis and peduncles glabrous, scurfy, or sparsely appressed pubescent, axis 2–5(–7) mm long, peduncles 3–8 mm long. Flowers 5–merous; calyx lobes membranous 0·6–0·85 mm long, united to about the middle with oblong obtuse pubescent fimbriate lobes; corolla sparsely or densely pubescent, 1·4–1·6(–1·8) mm long, 1·8–2·3 times as long as the calyx; stamens *ca* 4 mm long; ovary densely pubescent. Pod glabrous, linear, not seen mature; seeds possibly transverse.

MARANOA DISTRICT: 15 km W of Mitchell, 26°30'S 147°47'E, Sep 1967, *Pedley* 2505.

Acacia maranoensis (womal) has a restricted range in the Roma–Mitchell area where it grows on texture contrast soils usually in woodland of *Eucalyptus populnea.* It flowers in September. The affinities of *A. maranoensis* are not clear. If it has transverse seeds then it most closely resembles *A. melvillei.* It can be distinguished from other species of the Microneurae group by its large heads of flowers.

94. Acacia calcicola Forde & Ising, Trans. Roy. Soc. S. Aust. 87:753 (1958). **Type:** Evelyn Downs, Nov 1954, *Ising* 3924 (AD, holo; K, P, iso).

Rounded shrub to 3 m tall and 3 m diameter; branchlets angular or somewhat flattened with dense silvery appressed hairs. Phyllodes coriaceous, straight or slightly hooked, with dense appressed silvery hairs, somewhat golden on young phyllodes, (5–)7–11 cm long, 2–5 mm broad, (15–)20–35(–40) times as long as broad; obscure parallel longitudinal nerves, 1–3 more prominent than the rest; pulvinus 1–2 mm long; basal gland inconspicuous. Heads of 30–40 flowers in very densely appressed pubescent axillary 2–4 branched racemes, axis 3–11 mm long; peduncles 2–8 mm long. Flowers 5–merous; calyx lobes ± free, 0·8–1 mm

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***Acacia maranoensis** species nova; a speciebus ceteris gregis Microneurae capitulis amplis differt, sed arctius similem *A. melvillei* Pedley est. **Typus:** *Pedley* 2410 (BRI, holo; A, CANB, K, L, MO, NSW, PR, LE, RSA, iso)

Arbor usque 10 m alta cortice fuscata sulcata tecta; ramuli angulares furfuracei flavidi. Phyllodia coriacea, furfuracea ubi juvenia, recta linearia acuta aliquando leviter uncinata, 11–15(–20) cm longa, 4–7 mm lata, 16–30(–40)–plo longiora quam lata, crebre obscure longitudinaliter nervata, 1–3 nervis paulo prominentibus; glans basalis inconspicua; pulvinus 1–2 mm longus. Capitula 30–60–flora leviter elongata in racemos 3–6–ramosos axillares, axe 2–5(–7) mm longo glabro furfuraceo vel sparsim pubescenti et pedunculis indumento similari 3–8 mm longis instructos disposita. Flores 5–meri; calyx membranaceus 0·6–0·85 mm longis lobis oblongis obtusis pubescentibus fimbriatis tubum ± aequantibus, corolla sparsim vel dense pubescens, 1·4–1·6(–1·8) mm longa calyce 1·8–2·3–plo longior; stamina circa 4 mm longa; ovarium dense pubescens. Legumen glabrum lineare ubi maturum non visum; semina fortasse transverse ordinata.

long, consisting of a membranous glabrous stipe and a thicken, pubescent rounded lamina *ca* 0·3 mm broad, somewhat incurved at the top, the hairs slightly yellowish; corolla lobes free, obovate, 1·1–1·3 mm long, 1·2–1·5 times as long as calyx, densely pubescent sometimes only at top; stamens 2–3 mm long; ovary densely pubescent. Pod flat but slightly turgid, constricted between the seeds with appressed hairs, 10–12 cm long, *ca* 6 mm wide. Seeds longitudinal *ca* 6 × 4 mm; areole large, broad, open; funicle thickened and folded about 3 times beneath seed.

GREGORY SOUTH DISTRICT: 15 miles [24 km] SE of "Naryilco", 28°42′S 142°08′ E, *Silcock* S354. WARREGO DISTRICT: Beechal Creek, 81 miles [130 km] from Charleville on old Quilpie Road, Sep 1963, *Everist* 7522.

Acacia calcicola is common in shrubland with *A. aneura* on degraded sandhills in far south-western Queensland, north of Tibooburra (New South Wales). It occurs sporadically, usually on drainage lines, in the Bulloo and Paroo basins. In South Australia and the Northern Territory *A. calcicola* occurs on calcareous soils derived from limestone, but in Queensland it is found only on more or less neutral soils. It flowers in October and November but immature pods have also been collected in September. Flowering may be dependent on rain falling when temperatures are high in the spring and early summer.

Like other species of the Microneurae group, *A. calcicola* is more readily identified in the field than in the herbarium. It is a dense rounded shrub or small tree with yellow-green fresh growth contrasting with darker green old phyllodes. *A. cana* is probably its nearest relative. This has small heads of flowers in usually shorter racemes and small calyxes about a third to half as long as the corolla.

95. Acacia microsperma Pedley, Contrib. Qd Herb. 15:3 (1974). **Type:** "Pine Hills" *ca* 18 miles N of Gradule, Sep 1946, *Everist* 2696 (BRI, holo; A, K, iso).

A tree to *ca* 10 m tall with angular scurfy branchlets pubescent with appressed hairs. Phyllodes coriaceous, linear, usually a little hooked at the tip, broadest a little above the middle, pruinose, covered with short appressed hairs; (4–)7·5–12·5 cm long, 1·5–4 mm wide, 20–80 times as long as wide; one longitudinal nerve slightly more prominent, the others numerous ± parallel indistinct; an indistinct gland, consisting of a small swelling and proximal orifice, at the base; pulvinus *ca* 1 mm long. Heads of 20–30(–40) flowers in axillary racemes made up of a pubescent axis of 0·5–2 mm long and 3–4 pubescent branches 3–6 mm long or sometimes the racemes reduced to clusters of heads in the axils. Flowers 5–merous; calyx 0·5–0·7 mm long with short obtuse lobes, the whole pubescent or the lower part glabrous; corolla lobes free or joined to the middle, 1–1·6 mm long, 2–2·5 times as long as the calyx, pubescent; ovary pubescent. Pod up to 6 cm long, 2–3 mm wide, flat but convex over the seeds and contracted between them. Seeds 2·5–4 mm long, 1·5 mm wide, longitudinal with the funicle folded many times forming an aril.

WARREGO DISTRICT: *ca* 45 km E of Adavale, 26°S 145°02′E, Sep 1967, *Pedley* 2499. MARANOA DISTRICT: "Bonus Downs" *ca* 30 miles [48 km] S of Mitchell, Nov 1957, *Everist* 5684.

Acacia microsperma (bowyakka) often forms dense stands alone or with *Eucalyptus thozetiana* on shallow soil overlying weathered rock. It occurs from about Talwood to Adavale but its range is rather fragmented within this area. It flowers usually in September and October and fruits about December.

96. Acacia cana Maiden, J. & Proc. Roy. Soc. N.S.W. 53, errata (1920). Based on *A. eremaea* Maiden, J. & Proc. Roy. Soc. N.S.W. 53:206 (1920), non C. Andrews (1904). **Type:** Milparinka, Sep 1906, *Ivey* (NSW, holo; BM, K, iso)

Tree to 20 m tall with grey fissured, long-flaky and fibrous bark; branchlets ribbed with appressed white hairs, glabrescent. Phyllodes coriaceous, linear, straight or slightly falcate, acute, sometimes slightly hooked, with dense silvery appressed hairs, becoming sparse or absent; (4–)6–13(–16) cm long, (1·5–)3–5(–6) mm wide, (10–)15–50(–75) times as long as wide; many fine parallel nerves, 1–3 slightly more prominent than the rest; pulvinus 1–3 mm long; gland basal, inconspicuous particularly when phyllode narrow. Heads of (15–)25–30 flowers in axillary densely appressed pubescent 2–6 branched racemes, indumentum usually silvery but occasionally golden, axis 1–4 mm (rarely to 12 mm) long, peduncles 3–8 mm (rarely to 11 mm) long. Flowers 5–merous; calyx 0·5–0·6(–0·8) mm long with lobes 0·2–0·3 mm long, sparsely to densely pubescent especially in the upper half; corolla 1·1–1·6(–1·8) mm long, 2·2–2·7 times as long as the calyx with some appressed hairs; stamens 2·5–3 mm long; ovary densely white pubescent. Pod ± flat, longitudinally striate, raised over seeds and somewhat contracted between them, up to 10 cm long, 5–6 mm broad; seeds longitudinal, disc-like with slight rim, 4–6 mm long, 3–4 mm broad; areole not prominent, open; funicle ribbon-like with about 1–3 folds under the seed.

BURKE DISTRICT: 10 miles [16 km] N of Hughenden, Jun 1953, *Lazarides* 3613. COOK DISTRICT: 4 miles [6 km] SE of Einasleigh, Jun 1966, *Pedley* 2113. NORTH KENNEDY DISTRICT: 20 miles [32 km] W of Bowen, Jun 1958, *Pedley* 266. MITCHELL DISTRICT: between Blackall & Yalleroi, May 1937, *Everist* 1501. SOUTH KENNEDY DISTRICT: 4 miles [6 km] ESE of "Wells Plains" [90 km ± N of Clermont], Aug 1964, *Adams* 1257. GREGORY SOUTH DISTRICT: "Raymore", *ca* 60 miles [95 km] SE of Windorah, Aug 1963, *Everist* 7472. WARREGO DISTRICT: Grey Range, between Quilpie & Eromanga, May 1928, *White*.

Acacia cana (boree) is a common tree, either singly or in open groves, in *Astrebla* grassland on rolling country from a little north of Hughenden to about Tambo. Outside of its main area of distribution there are scattered occurrences, usually fringing *A. cambagei* communities in the southern part of the Suttor basin and near Quilpie, and in pure stands near Einasleigh. In these places *A. cana* occurs on clay soils, but near Bowen, more than 200 km from the Suttor basin localities, it is reported to occur on sandy soils. Milparinka, the type locality of the species, is about its southern limit. There is a considerable range of variation in *A. cana,* particularly in width of phyllodes and in the number of heads in the racemes. Plants from Milparinka and from near Bowen have narrow phyllodes and racemes with fewer heads than plants from the main range of the species.

Though Maiden in the protologue of *A. eremaea,* a name he immediately corrected to *A. cana,* cited a specimen collected from the Thompson River, Longreach, there has been some question whether in fact the "boree" from central inland Queensland was in fact *A. cana.* Queensland plants are usually larger with broader, less pointed phyllodes, but I have not found any significant differences in flowering or fruiting characters. Analysis of the dimensions of the phyllodes (see p. 89) also indicates that the application of the name *A. cana* to Queensland plants is correct.

Flowering occurs from May to July, and fruiting in October and November. Only a small proportion of specimens bear fruit.

97. *Acacia ammophila Pedley. **Type:** Dynevor Lakes, 32 km E of Thargomindah, 28°5′S 144°12′E, May 1971, *Boyland* 2901 (BRI, holo).

Tree to about 6 m tall with dark grey furrowed bark; branchlets slender angular, with white appressed pubescence, becoming glabrous on angles. Phyllodes coriaceous, ± straight, acute, with yellowish margins and indumentum of appressed white hairs, sparse on older phyllodes, 10–20 cm long, 2·5–6 mm broad, 25–50 times as long as broad, three longitudinal nerves slightly more prominent than the other parallel longitudinal nerves; gland basal; pulvinus 2–3 mm long. Heads of 25–30 flowers in short axillary appressed pubescent 2–4 branched racemes sometimes reduced to one flower head and sometimes growing out into leafy shoots, axis 1–3(–4) mm long, peduncles 7–11 mm long. Flowers 5–merous; calyx 0·5–0·6 mm long, deeply lobed with ± oblong obtuse ciliate, slightly pubescent lobes; corolla glabrous 1·3–1·5 mm long, *ca* 2·5 times as long as the calyx; ovary densely pubescent. Pod 13–17 cm long, 4–5 mm broad, flat, contracted between seeds, minutely appressed pubescent, glabrescent longitudinally striate. Seeds longitudinal, funicle ribbon-like, once or twice folded beneath seed.

WARREGO DISTRICT: 20 miles [32 km] W of Adavale, Sep 1967, *Pedley* 2494; Dynevor Lakes, 32 km E of Thargomindah, Aug 1963, *Everist* 7494.

Acacia ammophila is known from only two localities—near Dynevor Lakes, 32 km east of Thargomindah where it occurs on sandy red earth on the lower slopes of dunes and on surrounding areas with *A. aneura,* and 32 km east of Adavale where it occurs on heavier alluvial soil with *A. calcicola.* Flowers have been collected in May and fruits seem to mature about October. The affinities of the species are not clear. In the field it resembles *A. cana* but it differs from this and other species of the Microneurae group in having flat pods distinctly contracted between the seeds.

98. Acacia pendula A. Cunn. ex G. Don, Gen. Syst. 2:403 (1832). **Type:** Lachlan River, Jun $\frac{434}{1817}$, *Cunningham* (K; BM, iso; lectotypus novus).

A. leucophylla Lindl. in Mitchell, Three Exped. Eastern Australia 2:13 1838), non Sweet, Hort. Brit. ed 1:101 (1827), *nomen.* **Type:** not seen.

***Acacia ammophila** species nova ab *A. microsperma* Pedley pedunculis longioribus, calycis lobatis profundius leguminibus seminibusque amplioribus, et ab *A. cana* Maiden calycis lobatis profunde corollis glabris leguminibus inter semina contractioribus sine indumento argenteo differt. Typus: *Boyland* 2901 (BRI, holo).

Arbor usque 6 m alta cortice atrogrisea sulcata tecta; ramuli tenues angulares albide pubescentes in angulis glabrescentes. Phyllodia coriacea ± stricta acuta marginibus flavidis et indumento (sparso in phyllodiis vetioribus) pilorum alborum appressorum praedita, 10–20 cm longa, 2·5–6 mm lata, 25–50-plo longiora quam lata; 3 nervi longitudinales paulo prominentiores quam ceteri nervi longitudinales paralleli; glans basalis; pulvinus 2–3 mm longus. Capitula 25–30–flora in racemos breves 2–4–ramosos axillares pubescentes, axe 1–3(–4) mm longo pedunculis 7–11 mm longis instructos disposita, interdum racemus ad capitulum singulare reductus vel interdum racemus in surculum foliaceum crescens. Flores 5–meri; calyx 0·5–0·6 mm longus profunde lobatus lobis ± oblongis obtusis ciliatis leviter pubescentibus; corolla glabra 1·3–1 5 mm longa, calyce circa 2·5–plo longior; ovarium dense pubescens. Legumen 13–17 cm longum, 4–5 mm latum, planum, inter semina contractum minute pubescens glabrescens striatum longitudinaliter. Semina longitudinaliter disposita; funiculus subter semino semel vel bis plicatus.

Tree to 12 m tall with pendulous branches; branchlets brownish, slender, angular, at first with indumentum of dense appressed hairs, coming off leaving hair in patches. Phyllodes sometimes rather membranous, straight or curved, narrowed gradually to the base, acute or apiculate, densely to sparsely appressed pubescent 5–10(–14) cm long, 4–8(–9) mm wide, (6–)9–20(–25) times as long as wide; many parallel longitudinal nerves, 1–3 more prominent that the rest; pulvinus 1–2·5 mm long; gland ± basal. Heads of 14–20 flowers in 2–4 branched moderately to densely appressed pubescent axillary racemes; axis 1–2·5 mm long peduncles 1·5–4·5 mm long, the axis rarely up to 2 cm long with 10 branches. Flowers 5–merous; calyx membranous, 0·6–0·7 mm long, lobes finally free, oblong, fimbriate, paler and concave at the top, sometimes pubescent; corolla 1·2–1·3 mm long, about twice as long as the calyx, lobes united to the middle or free, sparsely appressed pubescent or less frequently glabrous; stamens *ca* 3 mm long; ovary densely pubescent with appressed hairs (glabrous when rudimentary). Pod flat sparsely appressed pubescent, 4–8 cm long, 8–18 mm wide, winged along upper margin, the wing *ca* 3 mm broad, with reticulate transverse nerves. Seeds transverse, 5–7 mm long, *ca* 4·5 mm broad, rimmed; areole short, broad, open; funicle scarcely thickened with 1–2 folds under the seed. (Fig. 10K, pod).

MITCHELL DISTRICT: "Terrick Terrick", *ca* 40 miles [64 km] SW of Blackall, Sep 1960, *Everist*. LEICHHARDT DISTRICT: *ca* 10 miles [16 km] N of Emerald, Jul 1962, *Story & Yapp* 191. WARREGO DISTRICT: Morven, May 1934, *Blake* 5675. MARANOA DISTRICT: 22 miles [35 km] W of Roma, Oct 1948, *Everist* 3521. DARLING DOWNS DISTRICT: Goondiwindi, May 1956, *Jones*.

Acacia pendula which is known as myall in Queensland and boree in New South Wales is an attractive silvery tree with pendulous branchlets. It ranges from the Clermont–Emerald area in central Queensland southward into New South Wales. It commonly forms groves in glassland on clay soils but it is also associated with *Eucalyptus populnea,* or less commonly, *A. harpophylla*. It flowers in May and June and mature fruits have been collected in October and November.

99. Acacia cambagei R. T. Baker, Proc. Linn. Soc. N.S.W. 25:661 (1900). **Type:** Bourke, *Cambage* (not seen).

Misapplied name: *A. georginae* auct. non F. M. Bailey; Domin, Biblioth. Bot. 89:261 (1926).

Spreading tree to 15 m with dark grey flaky bark; branchlets angular, glabrous to densely appressed hairy. Phyllodes coriaceous, usually glabrous but with scattered dense appressed hairs when young, often with greyish bloom coming off with age, straight or falcate, acute, 5–12(–13) cm long, 4–10(–14) mm wide, 6–16 (sometimes to 27) times as long as wide, 1–3 nerves prominent, the rest (*ca* 30) obscure; pulvinus 2–4(–6) mm long; gland at the base not prominent, merely a small swelling with a small orifice. Heads of 15–25 flowers in short, 4–10, rarely 20-branched racemes sometimes growing into leafy shoots, the axis 2–9 mm long, occasionally up to 3 cm long, sparsely to densely appressed pubescent, branches 5–8(–12) mm long, sparsely appressed pubescent. Flowers 5–merous; calyx lobes 0·5–0·6 mm long, free or united to the middle, obtuse, pubescent at the top; corolla lobes 1·1–1·3 mm long, ± free, glabrous or with a few hairs at the back; stamens *ca* 3 mm long; ovary velutinous (glabrous if aborted early in development). Pods flat, rather membranous, coarsely reticulately nerved, straight, curved or twisted, up to 13 cm long, 9–12 mm wide. Seeds longitudinal, soft with a distinct rim at the distal end (at least when dry), 7·5–9 mm long, 5·5–7 mm wide; areole irregular, short, open; funicle slightly thickened and folded.

BURKE DISTRICT: 40 miles [64 km] NE of Richmond, Jun 1954, *Speck* 4479. GREGORY NORTH DISTRICT: "Ardmore", near Split Creek, Oct 1962, *Pedley* 1135. MITCHELL DISTRICT: Blackall, Oct 1939, *Everist* 1891. SOUTH KENNEDY DISTRICT: *ca* 62 miles [100 km] NNW of Clermont, May 1964, *Adams* 958. LEICHHARDT DISTRICT: 7 miles [11 km] SE of "Batheaston", Jul 1962, *Story & Yapp* 156. GREGORY SOUTH DISTRICT: "Nockatunga", 80 miles [128 km] W of Thargomindah, Jun 1936, *Blake* 11815. WARREGO DISTRICT: Carbean near Cunnamulla, Mar 1941, *White* 11814. MARANOA DISTRICT: 38 miles [61 km] W of "Boolba", 28°S 147°32'E, Jun 1969, *Trapnell* E10.

A. cambagei ("gidgee", "gidyea" or "gidgea") is widely distributed from the Northern Territory west of Camooweal through inland district into north-western New South Wales. In the basin of the Georgina River it is replaced by *A. georginae*. On the whole the geographic range of *A. cambagei* is west of that of *A. harpophylla* but in the basins of the Belyando and Suttor Rivers the two species intermingle. Where they occur together *A. harpophylla* is found in moister situations, such as on the edge of melonholes or along drainage lines. As in *A. harpophylla* flowering is probably dependent to some extent on adequate soil moisture and correct temperature, but flowering material has been collected from April to July and fruits from August to October.

A. cambagei is found usually in extensive dense stands (open-forests) on dark cracking clay soils in the southern and eastern part of its range, but in the north-west it forms open-woodland communities on loamy soil as well as open-forests. Stands of gidgee are often associated with grassland. Flowering trees have an evil smell, found in other species but not as powerfully.

The identification of *A. cambagei* and its near relative *A. georginae* are seldom difficult in the field, but herbarium specimens might be confused with *A. omalophylla*, which however has usually narrower phyllodes less branched racemes and narrower pods. The differences between *A. cambagei* and *A. georginae* are noted under *A. georginae*.

100. Acacia georginae F. M. Bailey, Bot. Bull. 13:9 (1896). **Type:** Georgina River, *sine coll.* [*Bick*] (BRI, holo).

Tree to 8 m tall but usually 3–5 m, with dark grey flaky bark similar to that of *A. cambagei*. Branchlets angular with grey bloom and scattered appressed hairs. Phyllodes coriaceous with greyish bloom and scattered appressed hairs, straight, acute, 4·5–9 cm long, 5–12(–15) times as long as wide; 1–3 longitudinal nerves prominent, the rest indistinct; gland, indistinct, basal; pulvinus 2–4 mm long. Heads of 20–25 flowers in 5–6(–13) branched, moderately to densely appressed pubescent racemes, the axis 4–8(–20) mm long, peduncles 7–9(–12) mm long. Flowers 5–merous; calyx 0·7–0·9 mm long, free linear, spathulate or oblong, obtuse, ciliate; corolla (1·3–)1·5–1·8 mm long, lobes at first united to the middle, eventually free, moderately to densely appressed pubescent; stamens *ca* 3 mm long; ovary velutinous. Pod flat, curved or coiled, reticulately nerved, glabrous or with sparse appressed hairs particularly near the margin, 6–13 cm long, 1·5–2·5 cm wide; seeds transverse or somewhat oblique, with a distinct acute rim, 9–10(–12) mm long, 7–8(–11) mm wide; areole obscure; funicle hardly thickened or folded.

GREGORY NORTH DISTRICT: 24 miles [38 km] NW of "Oban", May 1948, *Perry* 802.

Acacia georginae (Georgina gidgee) is restricted to the part of the Georgina River basin between about 21°S and 23°S latitudes in Queensland and adjacent parts of the Northern Territory. It forms woodland or open-woodland communities

on soils ranging from cracking clays to loams. It is extremely toxic to animals as it contains fluoroacetic acid (see Everist 1974, for references) and is therefore of considerable economic importance.

It is not sympatric with *A. cambagei* but on the eastern and northern edge of the range of *A. georginae* where the two do occasionally occur together they may be difficult to distinguish. *A. georginae* has broad twisted pods and a densely pubescent corolla and is usually a smaller and more gnarled tree than *A. cambagei*. The flowering and fruiting behaviour of the two are similar.

101. Acacia omalophylla A. Cunn. ex Benth., London J. Bot. 1:365 (1842); Fl. Austr. 2:383 (1864). **Type:** Lachlan River and Liverpool Plains, May $\frac{419}{1817}$, *Cunningham* (K; BM, iso; lectotypus novus).

Tree to *ca* 6 m tall; branchlets angular varying from moderately to sparsely appressed pubescent (hairs *ca* 0·1 mm long), occasionally glabrous. Phyllodes coriaceous, straight or slightly curved, about equally narrowed to each end, sometimes slightly hooked, slightly scurfy to glabrous, (4–)5–8(–11) cm long, (4–)5–7(–9) mm wide, 8–15(–20) times as long as wide; many parallel longitudinal nerves, fine and inconspicuous, 3 more prominent; gland basal; pulvinus 2 mm long. Heads of 20–30 flowers in condensed axillary sparsely to densely pubescent racemes of 2–3 branches, the axis 1·5–5 mm long, peduncles 3–5 mm long. Flowers 5–merous; calyx 0·5–0·7 mm long, glabrous with obtuse fimbriate lobes *ca* 0·2 mm long; corolla 1·2–1·5 mm long, 2·2–2·8 times as long as the calyx, the lobes ± free glabrous; stamens *ca* 3 mm long; ovary densely white appressed pubescent. Pods ± flat up to 9 cm long, 3–4 mm wide, with prominent margins, slightly raised over the seeds and slightly contracted between them, glabrous or with a few scattered hairs; seeds longitudinal, *ca* 4 mm long, 2–2·2 mm wide with small u-shaped areole; funicle twice folded into aril on one side at base of seed.

WARREGO DISTRICT: "Monamby", 5 miles [8 km] W of Coo'addi [112 km W of Charleville], Sep 1966, *Burrows*. MARANOA DISTRICT: "Goondoola", 40 miles [64 km] SE of St George, Dec 1961, *Pedley* 930.

Acacia omalophylla (yarran) is not common in Queensland. It is restricted to the Warrego and western part of the Maranoa district where it is found as scattered trees usually with *Eucalyptus populnea* on texture-contrast soils. It flowers irregularly, in the period May to September.

A. omalophylla resembles *A. pendula* closely in size and shape of phyllodes, and in characters of the inflorescence and flowers, but *A. pendula* is usually pubescent and has broader pods with a distinct winged margin and transverse seeds. The common name yarran is also applied in Queensland to *A. melvillei* which has broader phyllodes and broad pods with transverse seeds.

Bentham used the epithet "omalophylla" in the protologue. Later he changed this to "homalophylla" which is etymologically more correct. Cunningham in his manuscript (herb. Kew) however used the form "omalophylla" and I believe this is the spelling that must be adopted.

102. ***Acacia melvillei** Pedley. **Type:** 9 miles [14 km] ENE of Springsure, Sep 1961, *Lazarides & Story* 38 (BRI, holo).

Tree up to *ca* 15 m tall; branchlets yellowish, angular, usually glabrous or sometimes sparsely to moderately appressed pubescent. Phyllodes coriaceous, oblong or narrowly elliptic, glabrous or with a few appressed hairs, 5–8(–10·5) cm long, (5–)7–12(–25) mm wide, (3·5–)6·5–10·5(–13·5) times as long as wide, many fine inconspicuous parallel nerves, 3 somewhat more prominent; gland basal, merely a swelling; pulvinus 2(–4) mm long. Heads of 30–50 flowers in condensed axillary racemes of 3–4(–5) branches, the axis 2–4(–7) mm long, glabrous or sparsely pubescent; bracteoles concave. Flowers 5–merous; calyx rather membranous, 0·5–0·7(–0·8) mm long, with obtuse fimbriate lobes 0·2–0·3 mm long sometimes slightly pubescent on the back; corolla 1·3–1·6 mm long (1·5–)2–3 times as long as the calyx, lobes eventually free; stamens *ca* 3 mm long; ovary densely (rarely rather sparsely) appressed pubescent, glabrous when rudimentary. Pod flat, membranous, transversely reticulately nerved up to 9 cm long, *ca* 1 cm wide; seeds transverse, 3·5–4·5 mm long, 2·5–4 mm broad, rather thick; areole open elongate; funicle folded 4–5 times, forming aril beneath the seed. (Fig. 8e, phyllode).

LEICHHARDT DISTRICT: 9 miles [14 km] ENE of Springsure, Sep 1961, *Lazarides & Story* 38. MARANOA DISTRICT: Roma, *Scortechini*. DARLING DOWNS DISTRICT: 11 miles [18 km] SW of Dalby on Tara Road, Aug 1946, *Everist* 2665. BURNETT DISTRICT: Ironpot Creek, Aug 1947, *Michael* 3017.

In Queensland both *A. melvillei* and *A. omalophylla* are known as "yarran". *A. melvillei* ranges from the Clermont–Emerald area to about Dalby and is also found in inland New South Wales and at Mildura in Victoria. It occurs on fine-textured soils and often forms groves either in woodland of *Eucalyptus populnea* (poplar box) or in grassland. Flowering occurs from July to October and fruiting specimens have been collected in November and December.

A. melvillei is distinguished from *A. omalophylla* with which it has been confused by its usually broader phyllodes, larger heads and transverse seeds. In herb. Kew and in most eastern Australian herbaria it has been recognised as being different from *A. omalophylla*. The species is named in honour of Dr Ronald Melville who segregated and annotated specimens of *A. melvillei* at Kew.

***Acacia melvillei** species nova affinis *A. omalophyllae* A. Cunn. ex Benth. plerumque phyllodiis latioribus capitulis amplioribus et seminibus transverse dispositis differt. Typus: *Lazarides & Story* 38 (BRI, holo).

Arbor usque circa 15 m alta; ramuli flavidi angulares glabri vel interdum sparsim vel moderate dense pubescentes. Phyllodia coriacea oblonga vel anguste elliptica glabra vel sparsim pubescentia, 5–8(–10·5) cm longa, (5–)7–12(–25) mm lata, (3·5–)6·5–10·5(–13·5)-plo longiora quam lata, nervis multis numerosis longitudinalibus, 3 aliquantum prominentioribus praedita; glans basalis tantum tumor; pulvinus 2(–4) mm longus. Capitula 30–50–flora in racemos condensos axillares 3–4(–5)–ramosos, axe 2–4(–7) mm longo glabro vel sparsim pubescenti instructos disposita; braceteolus concavus. Flores 5–meri; calyx aliquantum membraneus 0·5–0·7(–0·8) mm longus lobis obtusis fimbritis 0·2–0·3 mm longis dorsalis leviter pubescentibus; corolla 1·3–1·6 mm longa calyce (1·5–)2–3–plo longior lobis demum libris; stamina circa 3 mm longa; ovarium dense (raro sparsim) pubescens, glabrum ubi rudimentale. Legumen planum membraneum transverse reticulate nervatum, usque 9 cm longum, 1 cm latum; semina transversa, 3·5–4·5 mm longa, 2·5–4 mm lata, aliquantum crassa; areolus apertus elongatus; funiculus 4–5–plo plicatus arillum subter semino faciens.

103. Acacia montana Benth., London J. Bot. 1:360 (1842). **Type:** High land near Liverpool Plains, *Fraser* (K, holo).

A. clavata Schlect., Linnaea 20:662 (1847). **Type:** Auf dem östlichen Abhange der Berge nach den Scrub beim Murrayflusse. August. *Behr* (B, not seen).

Shrub; branchlets with yellowish nerves and sparse short crisped hairs; stipules short linear, 0·5 mm long, deciduous. Phyllodes subsessile, viscid, sometimes with scattered hairs bent sharply near the base, along phyllodes near the base and along the margin, narrowly oblong, obtuse, 2–4 cm long, 2·5–5·5 mm wide, 5–13 times as long as wide; two equally prominent yellowish longitudinal nerves and ± translucent lesser nerves reticulate between them. Heads of *ca* 25 flowers in pairs in the axils on rather glutinous, hirsute peduncles *ca* 3 mm long with a basal ovate concave bract. Flowers 5–merous; calyx lobes free almost to the base, 0·5–0·6 mm long, oblong, obtuse fimbriate, rather hirsute; corolla lobes, acute, free, 1·3–1·5 mm long, *ca* 2·5 times as long as the calyx; stamens *ca* 2·5 mm long; ovary hirsute. Pods *ca* 2·5 cm long, 2 mm broad, lanate. Seeds longitudinal, *ca* 3 mm long, 1·5 mm broad, the funicle 3–folded, forming cupular aril beneath the seed.

DARLING DOWNS DISTRICT: Amiens, 10 miles [16 km] WNW of Stanthorpe, Oct 1963, *Pedley* 1503.

Acacia montana is uncommon in Queensland. It has been collected only a few times, from the south-eastern part of the Darling Downs district. It flowers in September and fruit mature towards the end of the year. Specimens from Queensland have narrower phyllodes than the type specimen, but there is no doubt about the identity of the plant.

104. Acacia ixiophylla A. Cunn. ex Benth., London J. Bot. 1:364 (1842); Maiden, J. & Proc. Roy. Soc. N.S.W. 49:502 (1916). **Type:** North of Liverpool Plains, $\frac{90}{1827}$, *Cunningham* (K, holo).

A. fuliginea R. T. Baker, Proc. Linn. Soc. N.S.W. 31:712 (1906). **Type:** Bylong Ranges (Goulburn River), Nov 1892, *Baker* (NSW, holo).

Dense flat-topped shrub to 3 m tall; stipules setaceous, *ca* 0·5 mm long; branchlets yellowish, ribbed, very glutinous and densely pubescent. Phyllodes coriaceous, tapered equally to each end, apiculate, glutinous, usually with scattered soft hairs up to 0·5 mm long (1·7–)2–3(–4) cm long, 3–7(–9) mm wide, (2–)3–7(–10) times as long as wide; 3–5 parallel longitudinal nerves prominent and others ± translucent, loosely anastomosing, pulvinus very short; gland small, consisting of a rim with a small orifice, basal, usually hidden by hairs and resin. Heads of 20–35 flowers in 2–3 branched, glutinous, ± densely pubescent racemes, axis 2–6 mm long, peduncles 2–4 mm long; occasionally the axis growing out into leafy shoots before anthesis, and peduncles then extra-axillary. Flowers 5–merous; calyx lobes free (0·6–)0·8–1 mm long, obovate or spathulate, acute or obtuse, usually with a few long hairs at the top; corolla lobes free or united to the middle glabrous, (1·2–)1·4–1·7 mm long, 1·4–2 times as long as the calyx; stamens 3–4 mm long; ovary densely pubescent, the hairs sometimes long. Pod linear, raised over the seeds, curved or coiled, glutinous, glabrous, *ca* 5 cm long, 2–3 mm broad. Seeds longitudinal, 4–5 mm long, *ca* 1·8 mm wide with a prominent large oblong open areole; funicle 2–3 times folded beneath seed.

MITCHELL DISTRICT: 45 miles [72 km] N of Jericho, Aug 1962, *Cockburn*. SOUTH KENNEDY DISTRICT: 40 miles [64 km] S of Alpha, Apr 1961, *Johnson* 2172. LEICHHARDT DISTRICT: near "Mt Playfair", Sep 1963, *Cockburn*. DARLING DOWNS DISTRICT: Miles, Sep 1959, *Everist* 6143. MORETON DISTRICT: Heifer Creek, Aug 1931, *White* 7771.

A. ixiophylla is common east of Inglewood and around Miles, but there are sporadic occurrences as far north as Alpha and Jericho. It favours deep sandy soils with *Callitris columellaris* (Cypress pine) and sand overlying alkaline clay subsoil with *Casuarina leuhmannii* (bull oak). The flowering period is short, usually late August and September; and pods mature in November and December. Because of its habit and deep yellow flowers the species is often cultivated, but is often attacked by sooty mould.

Maiden discussed the identity and distribution of *A. ixiophylla* and *A. montana* at some length. I agree with his conclusion that Baker applied the name *A. ixiophylla* to *A. montana* and that Baker's *A. fuliginea* is identical with *A. ixiophylla*. I have not seen type material of *A. glutinosa* F. Muell. and do not know whether it and *A. ixiophylla* are conspecific. Though *A. ixiophylla* does occur in Western Australia neither Drummond II/129 nor IV/13 (both K) can be referred to either *A. ixiophylla* or *A. montana*.

In the protologue of *A. redolens*, Maslin stated that the gland of *A. ixiophylla* was some millimetres above the distal end of the pulvinus. This is not true of Queensland specimens nor of specimens seen by Maiden.

105. Acacia monticola J. M. Black, Trans. Roy. Soc. Sth Aust. 61:246 (1937). Based on *A. impressa* F. Muell., J. Proc. Linn. Soc. Bot. 3:133 (1859), non Lindl. **Syntypes:** Dividing Tableland between Sturts Creek and Victoria River, *Mueller* 43 (MEL; K, iso); Sturts Creek, *Mueller* 8 (MEL; K, iso).

Shrub to *ca* 4 m tall with dry reddish brown bark curling off in thin strips ("minneritchie" bark—similar to that of *A. cyperophylla* and *A. chisholmii*); branchlets ribbed, glutinous, clothed with moderately dense erect short hairs *ca* 0·1 mm long; stipules 1·2 mm, triangular, persistent. Phyllodes glutinous with some short hairs on the margins, oblong or obovate, obtuse or retuse, mucronulate, the mucro *ca* 0·7 mm long, dark and deciduous, (13–)15–25 mm long, 7–10 mm wide, 1·5–2·5(–3·5) times as long as wide, with 3–5 translucent longitudinal nerves and rather coarse reticulate nerves between them; gland small, disc-like at the distal end of the pulvinus or slit-like and *ca* 1 mm above it, prominent because it differs in colour from the rest of the phyllode; pulvinus *ca* 1 mm long. Heads *ca* 18–flowered, single in the upper axils on peduncles 13–16 mm long with indumentum similar to that of the branchlets; heads somewhat elongated especially on cultivated plants. Flowers 5–merous; calyx 0·75–0·85(–1·2) mm long, glutinous, glabrous except for the pubescent margins of the obtuse lobes 0·3–0·5 mm long, the sinuses obtuse; corolla 2–2·2(–2·8) mm long, thick, glabrous, striate with *ca* 5 obscure longitudinal nerves towards the centre of each lobe, 2·3–2·8 times as long as the calyx; stamens *ca* 5 mm long; ovary white hispid or densely papillose with few hairs. Pod flat, raised over the seeds, glutinous, hispid, nerve-like slightly tuberculate margins, obliquely transversely veined, the veins sometimes hidden by the indumentum, 4–6·5 cm long, *ca* 1 cm wide. Seeds transverse or slightly oblique, 5–6 mm long, 3·5–4·5 mm wide, *ca* 2 mm thick with a small closed areole surrounded by a pale area; funicle folded and flattened into a conspicuous aril.

BURKE DISTRICT: 33 miles [53 km] from Mt Isa on Cloncurry Road, Feb 1937, *Everist & Smith* 204.

Acacia monticola occurs in Queensland only in the vicinity of Mt Isa and at Settlement Creek. It flowers in May and fruits in September and October. It is not closely related to any other species and has several characters which set it apart from others of section *Plurinerves*. Its bark is similar to that of some species of section *Juliflorae*, and the striate corolla is found only in *A. phlebocarpa* and in section *Lycopodiifoliae*, among the Queensland species.

106. Acacia viscidula Benth., London J. Bot. 1:363 (1842). **Type:** Lachlan River, *Fraser* (K, holo).

A. viscidula var. *angustifolia* Benth., Fl. Aust. 2:387 (1864). **Type:** (not located).

Shrub to *ca* 3 m tall; branchlets resinous with yellowish ribs and sparse short hairs, often infested with sooty mould; stipules concave, fimbriate, *ca* 1 mm long. Phyllodes linear, straight or curved, apiculate with a slightly oblique point, glabrous or with a few marginal hairs, or sometimes moderately pubescent when young, the hairs 0·1 mm long, 4–8 cm long, 1–2·5(–3) mm wide, 17–27 times as long as broad, 5–7 ±parallel translucent longitudinal nerves slightly anastomosing. Heads of 20–25(–35) flowers in pairs in the upper axils, on sparsely to moderately pubescent peduncles (2–)3–5(–8) mm long. Flowers 5–merous; calyx lobes (0·7–)0·8–1 mm long, united in the lower third, oblong, concave, pubescent in the upper half with crisped hairs; corolla lobes ± free, obovate ± free (1·1–)1·3–1·5 mm long, 1·4–1·8(–1·9) times as long as the calyx lobes slightly to moderately pubescent in the upper half; stamens 2·5–3·5 mm long; ovary pubescent with spreading hairs *ca* 0·3 mm long. Pod linear with nerve-like margins raised over the seeds, *ca* 4·5 cm long, 2·5 mm wide, viscid, sparsely pubescent. Seeds longitudinal, *ca* 4 mm long, 2 mm broad; areole open, large in proportion to seed; funicle folded about 4 times to form basal aril.

DARLING DOWNS DISTRICT: Messines, Sep 1930, *Hubbard* 3979. MORETON DISTRICT: Crows Nest Falls, May 1960, *Everist;* Mt Maroon, Sep 1939, *Goy & Smith* 712.

Acacia viscidula is not a common species in Queensland. It occurs among rocks in the elevated country around Stanthorpe and on mountain peaks in the Moreton District. It flowers in September and October and the only fruiting specimen I have seen from Queensland was collected in November. The phyllodes of the Queensland material of *A. viscidula* are narrower than those of the type and possibly represent *A. viscidula* var. *angustifolia*. I have not located type material of the variety and for the time being at least I have not considered varietal distinctions.

107. Acacia dictyophleba F. Muell., Fragm. 3:128 (1862). **Type:** Mt Humphries, *McDouall Stuart* (MEL, holo).

Shrub, often glaucous; branchlets ribbed, glutinous, often with paler pustules; stipules ± persistent, 1–1·5 mm long. Phyllodes glabrous, glutinous with irregular tubercles on the nerves and minute pustules in the intercostal areas, 4–7 cm long, (6–)9–18 mm wide, 3–7(–9) times as long as wide, obtuse mucronulate, broadest above the middle with 2(–3) prominent longitudinal nerves and arching secondary nerves forming coarse reticulum; gland basal, large with a wide brown rim, a second smaller gland on the dorsal margin near the mucro. Heads of 40–50 flowers on glutinous peduncles 15–20 mm long in pairs, or

single in the upper axils. Flowers 5–merous; calyx 1·7–2 mm long with thick subacute, slightly incurved lobes 0·7–0·8 mm long; corolla 2·3–2·6 mm long, *ca* 1·5 times as long as the calyx; stamens 4–6 mm long; ovary glabrous, pod not seen. (Fig. 8h, phyllode.)

GREGORY SOUTH DISTRICT: Poeppel Corner, 26°S 138°E, Sep 1966, *Boyland* 256.

Acacia dictyophleba is restricted to the southern part of the Northern Territory and the south-western part of Queensland where it is found almost invariably on sand-hills. It flowers from May to about July.

It is distinguished from the more widely spread *A. melleodora* in having larger and more coarsely veined phyllodes and larger flowers forming much larger heads which are bright yellow.

108. ***Acacia melleodora** Pedley. **Type:** Charters Towers–Clermont Road *ca* 171 [275 km] from Charters Towers, May 1960, *Johnson* 1909 (BRI, holo).

Shrub to *ca* 3 m tall; branchlets ribbed, obscurely tuberculate, glutinous; stipules setaceous, 1–1·5 mm long. Phyllodes coriaceous, stiff, straight obtuse glutinous, usually with a few small tubercles, 3–4·5 cm long, (5–)7–10(–12) mm wide, 3–6 times as long as wide, young ones smaller and darker; nerves prominent, 2–3 major longitudinal ones and oblique anastomosing secondary ones; gland basal elongate, prominent, *ca* 1·5 mm long with a thick dark rim and small orifice. Heads of 30–40 flowers on glutinous axillary peduncles 1–2(2·5) cm long. Flowers 5–merous; calyx cylindrical, thick, somewhat resinous, 1·1–1·5 mm long with obtuse scurfy incurved lobes 0·2–0·3 mm long; corolla lobes, glabrous, united to the middle or rarely free, 1·6–1·9(–2) mm long, 1·2–1·6 times as long as the calyx; stamens 3–4 mm long; ovary glabrous or scurfy, somewhat resinous. Pods thin, rather brittle, flat, raised over the seeds alternately on each side, transversely veined *ca* 5 cm long, 1–1·5 cm wide. Seeds transverse *ca* 4 mm long, *ca* 2·5 mm broad; areole broad, open.

BURKE DISTRICT: 30 miles [48 km] NNE of Mt Isa, May 1948, *Perry* 767. GREGORY NORTH DISTRICT: "Headingley" *ca* 30 miles [50 km] N of Urandangie, Dec 1947, *Everist* 3339. MITCHELL DISTRICT: 23 miles [37 km] E of Barcaldine, Sep 1956, *Burbidge* 5534. SOUTH KENNEDY DISTRICT: Charters Towers–Clermont Road, *ca* 141 miles [225 km] from Charters Towers, May 1960, *Johnson* 1903.

***Acacia melleodora** species nova affinis *A. dictyophlebae* F. Muell. phyllodiis parvis tenuis nervatis floribus capitulisque parvis differt. Typus: *Johnson* 1909 (BRI, holo).

Frutex usque 3 m altus; ramuli costati obscure tuberculati glutinosi; stipulae setaceae 1–1·5 mm longae. Phyllodia coriacea rigentia stricta obtusa glutinosa plerumque aliquot tuberculis parvis ornata, 3–4·5 cm longa, (5–)7–10(–12) mm lata, 3–6–plo longiora quam lata, phyllodia juvenia parviora fuscatioraque; nervi prominentes, 2–3 majores longitudinales et oblique anastomosantes secundarii; glans basalis elongata prominens circa 1·5 mm longa margine crasso fuscato et orificio parvo constata. Capitula 30–40–flora in pedunculos axillares glutinosos 1–2(–2·5) cm longos disposita. Flores 5–meri; calyx cylindicus crassus aliquantum resinosus 1·1–1·5 mm longus lobis obtusis furfuraceis incurvatis 0·2–0·3 mm longis; lobi corollae glabri ad medium connati vel raro libri, 1·6–1·9(–2) mm longi, calyce 1·2–1·6–plo longiores; stamina 3–4 mm longa; ovarium glabrum furfuraceumve aliquantum resinosum. Legumen cartilagineum planum supra semina convexum utrinque alternatim, transverse venosum circa 5 cm longum 1–1·5 cm latum. Semina transverse disposita *ca* 4 mm longa *ca* 2·5 mm lata; areolus latus apertus.

Acacia melleodora is widely spread in inland parts of Queensland, the southern part of the Northern Territory and the extreme eastern part of central Western Australia. In Queensland it is extremely common on sandy red earths in the Mitchell district but it has also been recorded from shallow stony soils. It flowers in May and June and fruits in October and November.

It differs from *A. dictyophleba,* with which it has been confused in having smaller, less coarsely veined phyllodes, smaller flowers and smaller heads. When fresh it has usually a bright green varnished appearance and has a sweet smell even when dry.

109. Acacia dawsonii R. T. Baker, Proc. Linn. Soc. N.S.W. 22:153 t.8 (1897). **Type:** Rylstone, 11 Sep 1895, *Baker* (NSW, holo; K, iso).

Shrub; branchlets with translucent resinous ribs, densely pubescent between them with appressed hairs. Phyllodes coriaceous, glabrous, linear ± acute, up to 6 cm long and 4 mm broad, but often 3·5 cm long and 3·5 mm broad, up to 10 parallel longitudinal nerves, two of which are rather prominent, rather widely spaced with few anastomoses; gland near base; pulvinus *ca* 1 mm long. Heads of 4–6 flowers in 5–branched racemes up to 1 cm long, the axis and peduncles (*ca* 1 mm long) with minute appressed hairs. Flowers 5–merous; calyx 0·9 mm long divided into broad ± oblong acute lobes, scurfy in the upper part; corolla 1·5 mm long with slightly scurfy lobes; stamens *ca* 3 mm long; ovary ± papillose. Pods not seen.

DARLING DOWNS DISTRICT: Amiens near Stanthorpe, Sep 1966, *Harslett* in *Ward* 287.

Only one specimen of *A. dawsonii* has been collected in Queensland. The species is widespread in tableland districts of New South Wales. The small heads in short racemes distinguish it from all other species found in Queensland.

110. Acacia retivenia F. Muell., Fragm. 3:128 (1862). **Type:** Shorts Range, *McDouall Stuart* (MEL, holo; K, iso).

Shrub to *ca* 2·5 m tall; branchlets terete with indumentum of dense white hairs up to 0·5 mm long or glabrous; deltoid stipules *ca* 2 mm long. Phyllodes coriaceous, orbicular, retuse with a mucro, indumentum of dense crisped hairs or glabrous; 3–4 prominent longitudinal nerves and a fine but prominent reticulum of transverse nerves, the nerves raised, especially in dried material, the lower nerve ± straight, terminating at the mucro, the upper ones running to the margin which is often shallowly indented, 3–5(–6) cm long, (2–)2·5–4(–5) cm wide, 1–1·3(–1·6) times as long as wide; gland basal, large, with a distinct rim and a small orifice and 2 or 3 similar smaller glands on the margin near the termination of the upper nerves; pulvinus short. Flowers in a terminal raceme formed by the reduction of the upper phyllodes, 3–20 heads of 50–70 flowers on densely pubescent peduncles 15–30 mm long; receptacle densely hairy; bracteoles linear, acute, projecting beyond the flower buds. Flowers 5–merous; calyx 1·6–2 mm long, rather stout, lobed to the middle, thickened at the top, a few hairs at the base and top; corolla 1·1–2·4 (rarely 3) mm long, lobed to the middle, rather thick, incurved, ± pubescent on the lobes, 1·3–1·7 times as long as the calyx; stamens 4·5–4·6 mm long; ovary densely pubescent, sometimes only in the upper half. Pod flat, woody, transversely reticulate veined, to 5 cm long, *ca* 1·5 cm wide; densely pubescent or glabrate; seeds transverse *ca* 5·5 mm long, 3·7 mm wide and 1·7 mm thick; areole large and closed; funicle thickened, folded and expanded into a cup-shaped aril.

BURKE DISTRICT: 52 km E of Mt Isa, 1972, *Maconochie* 1641; 60 miles [96 km] ESE of Camooweal, May 1948, *Perry* 762 (glabrous variant).

Acacia retivenia occurs on gravelly soils, usually with *Eucalyptus leucophloia* and *Triodia* spp. in the vicinity of Mt Isa and near Settlement Creek and extends to the Northern Territory. It flowers from about May to August and mature pods have been collected from August to October.

A. retivenia is a distinctive plant with rather light green foliage and large yellow heads in a terminal raceme. A striking variant lacking the dense indumentum of the usual widespread form is found between Camooweal and Mt Isa. Both forms grow together and, despite its different appearance in the field and in the herbarium, the glabrous variant is not considered worthy of formal recognition.

111. Acacia venulosa Benth., London J. Bot. 1:366 (1842); F. Muell., Proc. Linn. Soc. N.S.W. ser. 2. 5:18 (1890), *pro syn;* R. T. Baker, *op. cit.* 10:383 (1895). **Type:** Barren country lying north of the Dumaresq River in 29°S, May $\frac{25}{1827}$, *Cunningham* (K, holo).

A. lanigera A. Cunn. var. *venulosa* (Benth.) Moore & Betche, Handb. Fl. N.S.W. 162 (1893). Based on *A. venulosa* Benth.

Erect little branched shrub to 2 m; branchlets ribbed with indumentum of soft curled hairs. Phyllodes coriaceous, narrowly elliptic or narrowly ovate, straight or curved, acute or obtuse, mucronulate, scurfy and with scattered hairs particularly near the margin, (3–)5–9 cm long, 4–12(–14) mm wide, (5–)6–9(–10) times as long as wide, 3 prominent longitudinal nerves with *ca* 6 other ± parallel nerves forming elongated anastomoses; gland 1–5 mm from the base; pulvinus 1–3 mm long. Heads of 30–40(–50) flowers on densely pubescent peduncles 3–8 mm long, in pairs in the axils or in 2–8 branched racemes, the axis 1–9 mm or rarely up to 25 mm long. Flowers 5-merous; calyx lobes free or united only at base, 0·9–1·1 mm long, spathulate, obtuse, pubescent or merely scurfy in the upper half; corolla glabrous, 1·6–2 mm long, 1·6–1·8 times as long as the calyx, the lobes usually 0·8 mm long, stamens 3–4 mm long; ovary with indumentum of dense matted hairs. Pod flat, linear, thin, with nerve-like margins, slightly raised over the seeds alternately on each surface, *ca* 7·5 cm long, 6 mm wide, densely pubescent. Seeds longitudinal, 4·5 mm long, *ca* 3 mm wide; areole rather large, open; funicle gradually thickened, folded twice to form basal aril.

LEICHHARDT DISTRICT: Blackdown Tableland, *ca* 32 km SE of Blackwater, Sep 1971, *Henderson, Durrington & Sharpe* 942. DARLING DOWNS DISTRICT: 8 miles [13 km] E of Wyberba, Oct 1958, *Pedley* 318. MORETON DISTRICT: *Crows Nest,* Oct 1921, *White.*

Acacia venulosa occurs on shallow granite soils in eucalypt open-forest in the vicinity of Stanthorpe and at Crows Nest. It has also been collected from the Blackdown Tableland, 350 km northwards, where it grows on shallow soils derived from sandstone. It has not been collected from other areas of sandstone such as Isla Gorge and the Carnarvon Gorge. Flowering occurs from August to October, and fruits mature in December and January.

A. venulosa. A. baeuerlenii (which occur in Queensland), *A. lanigera* A. Cunn. and *A. elongata* Sieb. ex DC. (which do not) are a group of species with similar venation and similar inflorescences. Mueller placed *A. venulosa* under *A. lanigera* and Moore and Betche reduced *A. venulosa* to a variety of *A. lanigera.* Baker however, considered *A. lanigera* and *A. venulosa* to be distinct —a view I share.

112. Acacia baeuerlenii Maiden & R. T. Baker, Proc. Linn. Soc. N.S.W. ser. 2. 10:583 (1895). **Type:** New Italy, Nov 1895, *Bäuerlen* (NSW, holo; BRI, K, iso).

Slender, often single-stemmed, shrub to 4 m; branchlets ribbed, furry with dense erect soft white or brown hairs *ca* 0·2 mm long. Phyllodes straight, broadest about the middle, acute with a small mucro, with scattered hairs when young, hairs restricted to pulvinus and base when old, 8–10(–15) cm long, (4·5–)6–8(–13) mm wide, 10–15(–20) times as long as wide; 3 slight prominent longitudinal nerves with about 12 other ± parallel ones, anastomosing but not as frequently as in *A. venulosa;* gland smaller, *ca* 1 mm from the base, usually with a tuft of hairs obscuring the orifice. Heads of *ca* 35 flowers in extremely reduced densely pubescent racemes, often appearing as single or paired peduncles, axis of raceme up to 2 mm long with peduncles 7–10 mm long. Flowers 5–merous, calyx laxly pubescent, *ca* 1 mm long, lobes *ca* 0·2 mm long; corolla 2–2·2 mm long; stamens 7–8 mm long; ovary with dense matted hairs. Pod flat, raised over the seeds, alternately on each surface furry except for glabrous marginal nerve, 7·5 cm long, 9 mm wide; seeds longitudinal or slightly oblique, 5–5·5 mm long, 3–3·2 mm broad, *ca* 2·5 mm thick; areole large, open; funicle twice folded to form basal aril.

MORETON DISTRICT: near Plunkett, Aug 1930, *Hubbard* 3779.

In Queensland *A. baeuerlenii* is known from only two localities—Helidon and Plunkett (near Tamborine Village) where it occurs on sandstone. It is an attractive shrub with large heads of white flowers in June and July, and is now cultivated to a limited extent. The large heads and more elongate phyllodes distinguish it from *A. venulosa.*

113. Acacia simsii A. Cunn. ex Benth., London J. Bot. 1:368 (1842), Fl. Aust. 2:382 (1864); Pedley, Contr. Qd Herb. 18:13 (1975). **Type*:** Cleveland Bay, Jun $\frac{3.14}{1819}$, *Cunningham* (BM, iso).

Shrub to 4 m tall; branchlets slender, angular, glabrous, lenticels sometimes conspicuous; stipules somewhat persistent, triangular, up to *ca* 1 mm long. Phyllodes rather membranous, glabrous, punctulate, usually papillose on the margins, straight or sometimes curved, linear, tapered to each end, acute sometimes apiculate, 5–11(–14) cm long, 2–7 mm wide, 13–33(–50) times as long as broad, many nerved, 1–3 more prominent than the rest and the others widely spaced, obscure when phyllode is narrow; gland small, always at base of phyllode with 1–5 similar smaller ones along dorsal margin; pulvinus 1–2 mm long. Inflorescence usually an axillary group of flowers (evidently a condensed raceme which may grow out into a leafy shoot), consisting of two pairs of heads, one head of each pair maturing before the other; heads of 25–30; peduncles glabrous, 5–8 mm long. Flowers 5–merous; calyx 0·6–0·8(–1) mm long, membranous with coarsely fimbriate rounded or obtuse lobes 0·2–0·3 mm long, or lobed to the base; corolla 1·3–1·5 mm long, separating to the middle or to the base into glabrous, elliptic uninerved lobes, 1·5–2 times as long as the calyx; stamens *ca* 3 mm long; ovary glabrous. Pod glaucous, flat with nerve-like margins, raised over the seeds alternately on each side and sometimes contracted between them,

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*Incorrectly cited previously as *Cunningham* $\frac{211}{1818}$.

5–8 cm long, 4–5(–7) mm wide. Seeds longitudinal, 3–4 mm long, *ca* 3 mm wide and 1·5 mm thick; areole pale, open or closed; funicle ± straight, thickened to form a clavate aril beneath the seed.

COOK DISTRICT: 65 miles [105 km] S of Cape York, 10°37′S 142°27′E, Jun 1968, *Pedley* 2727; Stannary Hills, Apr 1908, *Bancroft*. NORTH KENNEDY DISTRICT: Magnetic I., Jul 1938, *Goy* 339.

Acacia simsii is a common, and often collected, plant in coastal and sub-coastal districts of Queensland north of about Proserpine. It commonly occurs on sandy or gravelly soils in eucalypt open-forest and woodland but has also been reported from disturbed rain forest at Kuranda. It also occurs in the eastern part of Arnhem Land and in New Guinea. Flowers and fruits have been collected at most times of the year but the peak of flowering appears to be in January and February.

The structure of the inflorescence and the venation of the phyllodes suggest that *A. simsii, A. ramiflora, A. excelsa, A. complanata, A. legnota, A. fleckeri* and *A. multisiliqua* are related and they with some extra-Australia species could well form a distinct series. *A. multisiliqua* was treated by Bentham as a variety of *A. simsii* but it is specifically distinct.

In herb. Kew there is considerable confusion in type and other material of *A. simsii* and *A. multisiliqua.* There are two sheets segregated as type material. One of the sheets bears a label which identifies the material as being *Acacia simsii,* collected by Cunningham, but evidently three collections are represented:

1. Sims Island, April $\frac{211}{1818}$
2. Cleveland Bay, June $\frac{314}{1819}$
3. Repulse Bay, June $\frac{316}{1819}$

Of the four fragments on this labelled sheet two have a small tag "$\frac{316}{2d\ voy}$". The other two fragments are not tagged. Only one of the fragments with the tag "$\frac{316}{2d\ voy}$" is *A. simsii.* The other one and the two untagged fragments are *A. multisiliqua.* There are four twigs on the second sheet, all of them *A. multisiliqua.*

Cunningham $\frac{314}{1819}$, the holotype of *A. simsii,* cannot be identified with certainty. If it is represented at all on the sheets segregated as type material at Kew then it must be one of the untagged fragments, all of which are *A. multisiliqua.*

The material at BM is of considerable value. The same three collections as at Kew are represented, *Cunningham* 211, 314 and 316, but they are distinct. *Cunningham* 211 consists of two twigs, both *A. multisiliqua; Cunningham* 316 of three pieces, two of *A. simsii* and one of *A. multisiliqua;* and *Cunningham* 314 of five fragments, all of *A. simsii.*

I have considered it prudent to disregard the collections at Kew as being too confused to be of value, and to depend for the interpretation of *A. simsii* on the collection of Cunningham $\frac{314}{1819}$ at BM, an isotype. The confusion evident in the Kew collections is probably a longstanding one which led to Bentham's treatment of *A. multisiliqua.*

114. Acacia ramiflora Domin, Biblioth. Bot. 89:814 (1926). **Type:** In collibus arenosis Dividing Range dictis apud opp. Pentland, Feb 1910, *Domin* "5332" (PR, holo)

Slender shrub *ca* 3 m tall; branchlets angular, glabrous; stipules small, ± persistent. Phyllodes glabrous, straight or falcate, broadest above the middle, abruptly acuminate, the point up to *ca* 2 mm long, attenuate at the base, 8–12(–15) cm long, 3–6(–8) mm wide, 14–35(–50) times as long as wide, three longitudinal nerves prominent with a few less prominent anastomosing nerves between them; gland small, 1–4 mm from the base; pulvinus 1·5–2·5 mm long. Heads of 20–30 flowers on glabrous peduncles 3–4 mm long, subtended by a small ovate, concave bract, either in pairs or, as in *A. simsii,* in fours in the axils. Flowers 5–merous; calyx *ca* 0·8 mm long divided almost to the middle, with fimbriate, subacute lobes; corolla 1·6 mm long, glabrous, divided to about the middle; stamens 3 mm long; ovary glabrous. Pods somewhat glaucous, flat with nerved margins, raised over the seeds alternately on each side, 5–9 cm long, 8 mm wide; seeds longitudinal, not mature but the areole probably closed and the funicle without folds.

COOK DISTRICT: Robinson River, Jul 1925, *Brass* 409. MITCHELL DISTRICT: 34 km from Pentland towards Torrens Creek, Aug 1972, *Gittins* 2524.

Acacia ramiflora is restricted to sandstone hills of the Dividing Range near Pentland, and near the headwaters of the Gilbert River. It is evidently rare as it has been collected only three times, twice with young pods in July and August, and in flower in February. *A. ramiflora* and *A. simsii* are morphologically very similar. The phyllodes, short peduncles and broad pods distinguish *A. ramiflora* from the other.

115. Acacia complanata A. Cunn. ex Benth., London J. Bot. 1:369 (1842). **Syntypes:** barren country lying north of Dumaresq River in 29°S, $\frac{84}{1827}$, *Cunningham* (No. 90 of his 1829 list) (K; BM, iso); Brisbane River, in 1829, *Fraser* (K).

A. anceps Hook, Ic. Plant. t.167 (1832), non DC. (1825). **Type:** Brisbane River, in 1829, *Fraser* (K, holo).

Shrub to 5 m tall, branches arching downwards; branchlets flattened, winged, the phyllodes inserted above a small tooth. Phyllodes elliptic, obtuse, glabrous, 5–10(–11·5) cm long, (12–)16–30(–45) mm broad, 2–4·5(–7·5) times as long as wide; *ca* 9 prominent longitudinal nerves with fainter oblique nerves forming elongate anastomoses; gland 2–8(–12) mm from the base, a prominent rim projecting from the margin and a small orifice; pulvinus 2–3 mm long. Heads of 40–45 flowers in axillary groups of 4–8 flowers (reduced racemes), peduncles glabrous, 8–12 mm long, occasionally heads in racemes the axis to 12 mm long; bracteoles peltate. Flowers 5–merous; calyx lobes ± free or united to the middle, spathulate, obtuse 1·1–1·5 mm long, pubescent in the upper half; corolla lobes free or united in lower third, 1·6–2·5 mm long, 1·3–2 times as long as calyx, glabrous; stamens 4–5 mm long; ovary glabrous. Pod flat raised over seeds alternately on each side, reticulately nerved, glaucous, 10–15 cm

long, 7·5–10 mm wide. Seeds longitudinal or slightly oblique, *ca* 5·5 mm long, 4·5 mm wide; areole ± closed with pale halo; funicle ribbon-like, wrinkled and stout, running to hilar end of seed then recurved and passing completely around seed to base.

SOUTH KENNEDY DISTRICT: 55 miles [88 km] S of Alpha, Apr 1961, *Johnson* 2179. LEICHHARDT DISTRICT: Isla Gorge, 25°9′S 149°57′E, Sep 1968, *Everist* 8014. PORT CURTIS DISTRICT: Rosedale, *Dovey*. DARLING DOWNS DISTRICT: near Gurulmundi, Nov 1930, *Hubbard* 5154. BURNETT DISTRICT: Biggenden Bluff [Mt Walsh], May 1931, *White* 7690. WIDE BAY DISTRICT: Gundiah, Jun 1927, *White* 3496. MORETON DISTRICT: Mt Gravatt, Mar 1931, *White* 7408.

Acacia complanata is more or less restricted to rather shallow soils on sandstone in coastal districts as far north as about Bundaberg and in subcoastal districts north to the Blackdown Tableland. It is not particularly common but its deep yellow flowers and dark green phyllodes are attractive and conspicuous, and it is often collected. It flowers from December to about April and mature fruit have been collected from June to November. The strongly flattened branchlets distinguish it from all its near relatives except *A. homoclada* which has usually narrower and more elongata phyllodes.

The holotype of *A. anceps* Hook. is apparently one of the specimens cited cited by Bentham in the protologue of *A. complanata.*

116. *Acacia fleckeri Pedley. **Type:** Pascoe River crossing of Iron Range-Wenlock Road, Jul 1948, *Brass* 19664 (BRI, holo; K, iso).

Shrub to 6 m tall; branchlets glabrous angular. Phyllodes glabrous straight, broadest above the middle, obtuse, mucronulate, 9–12 cm long, *ca* 3–4 cm wide, 2·8–4 times as long as broad; 4–6 prominent longitudinal nerves with fainter oblique nerves running from them forming loose reticulum; gland small *ca* 1 mm from base; pulvinus *ca* 2 mm long. Inflorescence and flowers unknown, probably similar to those of *A. complanata.* Pods linear glabrous, 9–12 cm long, 8–9 mm wide, flat but raised over seeds alternately on each surface; seeds (very immature) longitudinal, encircled by the funicle. (Fig. 8g, phyllode)

COOK DISTRICT: Pascoe River, Jul 1949, *Flecker* NQNC 13194.

Acacia fleckeri has been collected only on the Pascoe River but I have seen it also on the Wenlock. In both places it occurs on deep sand. Among the Australian species it most closely resembles *A. complanata* though it lacks the markedly flattened stems. Its phyllodes resemble those of *A. simplex* which however has more longitudinal nerves and broader pods.

***A. fleckeri** species nova affinis *A. complanatae* A. Cunn. ex Benth. et *A. simplicis* (Sparrm.) Pedley; ab illa ramulis nom valde complanatis, ab hac nervis longitudinalibus paucis et leguminibus tenuiorbus differt. **Typus:** *Brass* 19664 (BRI, holotypus; K, isotypus).

Frutex usque 6 m altus; ramuli glabri angulares. Phyllodia glabra recta latissima supra medium obtusa mucronulata 9–12 cm longa *ca* 3–4 mm lata, 2·4–8–plo longiora quam lata; 4–6 nervi longitudinales prominentes et obliqui inconspicuores eos enascentes reticulum laxum facientes; glans parva 1 mm supra basin; pulvinus 2 mm longus. Inflorescentia et flores ignoti. Legumina linearia glabra 9–12 cm longa 8–9 mm lata, plana convexa supra semina utrinque alternatim; semina (perimmatura) longitudinalia funiculo cincta.

117. Acacia multisiliqua (Benth.) Maconochie, J. Adelaide Bot. Gard. (in press). Based on *A. simsii* A. Cunn. ex Benth. var. *multisiliqua* Benth., Fl. Aust. 2:382 (1864). **Type:** Carpentaria Island h4, 20 December 1802, *Brown* (K, holo).

Slender shrub, branchlets angular, slender; phyllodes coriaceous (rather fleshy when fresh), glabrous, straight or curved, linear, acute, mucronulate, 3·5–7·5 cm long, 4–10(–13) mm wide, 5–15(–18) times as long as wide, with (1 or) 3 well marked longitudinal nerves, not or little nerved between them, margin ribbon-like, minutely papillose; gland, a prominent flaring of the margin with a small orifice (1–)2·5–7 mm from the base with often 1 or 2 similar but smaller glands along the dorsal margin. Inflorescence similar to that of *A. simsii*. Flowers 5–merous; calyx divided to the base into lobes *ca* 0·8 mm long, expanded into short ovate obtuse lamina *ca* 0·1 mm wide, with a few long hairs on the stipe; corolla 1·4 mm long, divided to the base, glabrous; stamens *ca* 3 mm long; ovary glabrous. Pod similar in shape to that of *A. simsii*, 4–5 cm long, *ca* 4 mm wide; seeds longitudinal, 4 mm long, 3–3·5 mm wide, *ca* 1·6 mm thick; shield open or closed, pale; funicle similar to that of *A. simsii*. (Fig. 8f, phyllode).

BURKE DISTRICT: Adels Grove, Apr 1948, *de Lestang* 408. COOK DISTRICT: Mt Molloy, Apr 1932, *Brass* 2504. NORTH KENNEDY DISTRICT: Shute Harbour near Proserpine, Jul 1963, *Jones*. MITCHELL DISTRICT: 72 miles [115 km] E of Hughenden, Aug 1970, *Correll* 36. SOUTH KENNEDY DISTRICT: "Disney", *ca* 90 miles [145 km] N of Clermont, Jul 1964, *Pedley* 1725.

Acacia multisiliqua is widely spread in tropical Queensland and the northern part of the Northern Territory. It ranges more widely but is not as common as *A. simsii*. It seems to be confined to shallow soil often overlying sandstone. It flowers and fruits throughout the year.

Acacia multisiliqua and *A. simsii* are specifically distinct. Bentham's note in the protoloque of *A. simsii* var. *multisiliqua* that "both phyllodia occur on one specimen" is not true and must have been due to the confused state of the collections that Bentham worked with at Kew.

118. Acacia excelsa Benth. in Mitch., Trop. Aust. 225 (1848). **Type:** Subtropical New Holland, 6 Jul 1846, *Mitchell* "187" (K, holo).

A. daintreeana F. Muell., Fragm. 4:6 (1863). **Type:** Clarke River, *Daintree* (MEL, holo; K, iso).

A. excelsa var. *daintreeana* (F. Muell.) Domin, Biblioth. Bot. 89:264 (1926) ("Daintreana"). Based on *A. daintreeana* F. Muell.

A. excelsa Benth. var. *polyphleba* Domin, Biblioth. Bot. 89:263 (1926). **Type:** in xerodrymio apud opp. Pentland, Mar 1910, *Domin* (PR, holo).

A. excelsa Benth. var. *glaucescens* Domin, *loc. cit.* (1926). **Type:** in collibus arenosis Dividing Range apud opp. Jericho, Mar 1910, *Domin* (PR, holo).

Tree to 15 mm tall; bark dark grey hard fissured; small branches sometimes pendulous; branchlets angular glabrous. Phyllodes elliptic, obtuse or rarely acute, glabrous, variable in size (3–)4–6·5(–9) cm long, 3–16(–26) mm wide, (3–)4–12(–18) times as long as wide, with 3–6 parallel widely spaced longitudinal nerves, few or no secondary nerves and indistinct oblique nerves running off main ones: gland with a small orifice *ca* 2 mm from the base, often conspicuous because of indentation of the margin; pulvinus 1–2 mm long. Heads of 25–35 flowers on glabrous peduncles 5–10(–15) mm long, in axillary groups

of 3 or 4, or occasionally in 3–4 branched axillary racemes, the axis up to 10 mm long. Flowers 5–merous; calyx lobes ± free, broad spathulate, obtuse or subacute, 0·7–1·1 mm long, 0·3–0·5 mm broad, glabrous or sparsely pubescent; corolla lobes ± free, obovate, glabrous, 1·5–2 mm long, 1·6–2 times as long as the calyx; stamens few (25–35), 4·5–6·5 mm long; ovary glabrous. Pod flat, narrowly winged, coarsely reticulately nerved, 7–11 cm long, 6–9(–12) mm broad, contracted between the seeds and breaking at constrictions. Seeds longitudinal, *ca* 5 mm long, 4·5 mm wide, areole small, open, pale; funicle not at all thickened or folded.

118a. A. excelsa subsp. **excelsa**

Phyllodes (3–)4–6·5(–9) cm long, (5–)8–16(–26 mm wide, (3–)4–7(–10) times as long as wide with *ca* 6 ± parallel longitudinal nerves and few secondary nerves.

BURKE DISTRICT: 40 miles [64 km] NE of Richmond, Jun 1954, *Speck* 4481. NORTH KENNEDY DISTRICT: Broughton River, 7 miles [11 km] S of Charters Towers, Jun 1966, *Pedley* 2124. MITCHELL DISTRICT: Barcaldine, Apr 1919, *White*. SOUTH KENNEDY DISTRICT: near Mt Douglas, May 1962, *Gittins* 481. LEICHHARDT DISTRICT: Wandoan, Nov 1930, *Hubbard* 5018. WARREGO DISTRICT: Cunnamulla, Apr 1936, *Blake* 11185. DARLING DOWNS DISTRICT: "Glenoie" near Hannaford, Apr 1939, *Everist* 1785. BURNETT DISTRICT: Eidsvold, May 1913, *Bancroft*. MARANOA DISTRICT: 60 km W of Bollon, Apr 1972, *Weston* 40.

118b. *__A. excelsa__ subsp. **angusta**. Pedley. **Type:** Burke District: near Mistake Creek, about 100 miles S of Cloncurry, June 1934, *Blake* 6414 (BRI, holo).

Phyllodes 4–5(–7) cm long, 3–5·5 mm wide, 9–12(–18) times as long as wide with 3 ± parallel longitudinal nerves, no secondary and few oblique nerves.

BURKE DISTRICT: near Mistake Creek, *ca* 100 miles [160 km] S of Cloncurry, Jun 1934, *Blake* 6414. WARREGO DISTRICT: Climax Downs, *ca* 76 miles [120 km] SSW of Cunnamulla, Nov 1957, *Everist* 5641.

Acacia excelsa (ironwood) is widely spread in inland parts of Queensland and extends southward into New South Wales. It favours loamy or sandy soil often with *Eucalyptus populnea*. The main period of flowering is from April to July. Fruits remain on the trees for some time and have been collected in almost every month of the year.

Phyllodes vary considerably in size even on the one tree. Small plants grazed by stock often have small phyllodes while the phyllodes of young or vigorously growing shoots are usually broad. The variation in size of phyllodes led to the description of the two varieties by Domin.

A variant, *A. excelsa* subsp. *angusta,* which has narrow elongate phyllodes outside the usual range of variation of the species, occurs along the western edge of the range of the species, extending from Cloncurry to Nymagee in New South Wales. It was figured by Maiden (For. Fl. N.S.W. 4: t.125 (1908)) as a "narrow-leaved form". The variety approaches *A. estrophiolata* F. Muell. the species known in the Northern Territory as ironwood which, however, has even longer and narrower phyllodes. The venation of the phyllodes and the structure of the inflorescences points to a relationship between *A. excelsa, A. simsii* and other species noted on p. 84.

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*__A. excelsa__ subsp. **angusta** Pedley, subsp. nov.

Phyllodia 4–5(–7) cm longa, 3–3·5 mm lata, 9–12(–18)–plo longiora quam lata, 3 nervis ± parallelis longitudinalibus, secundariis nullis et obliquis paucis praedita. Typus: *Blake* 6414 (BRI, holo).

119. Acacia homaloclada F. Muell., Fragm. 11:34 (1878). **Syntypes:** Hinchinbrook I., 8 Nov 1867, and 13 Nov 1867, *Dallachy* (MEL).

Shrub to 5 m tall; branchlets flattened, *ca* 2 mm wide. Phyllodes not very coriaceous, curved, oblong or elliptic, acute or obtuse, 6–11 cm long, 9–20 mm wide (3·5–) 5–8 times as long as wide, to 13 cm long and 2·5 cm wide on young plants; 3 longitudinal nerves prominent, secondary nerves few, coarsely reticulate; gland prominent, rimmed with slightly elongate orifice 2–6 mm from the base; pulvinus 2–3 mm long. Heads of *ca* 25 flowers on glabrous axillary peduncles *ca* 8 mm long in pairs in the upper axils or in racemes up to 8 cm long with 9 branches or in terminal panicles. Flowers glabrous, 5–merous; calyx with free narrowly spathulate lobes 1–1·3 mm long; corolla 2–2·1 mm long, divided to the middle; stamens *ca* 3·5 mm long; ovary glabrous. Pods flat, glaucous, raised over the seeds with a prominent raised margin, slightly contracted between the seeds, *ca* 9 cm long, 8–9 mm wide. Seeds (immature), longitudinal, flat, *ca* 3·5 mm long; areole closed; funicle half-encircling seeds.

COOK DISTRICT: Yarrabah, Aug 1918, *Michael*. NORTH KENNEDY DISTRICT: 10 miles [16 km] N of Ingham, 18°29′S 146°10′E, Jun 1968, *Pedley* 2600.

Acacia homaloclada is a little known and uncommon species restricted to low sandy country near the sea from Hinchinbrook Island to Cape Flattery. It is an attractive shrub with a white trunk, arching branching and pink young shoots. Flowering occurs between May and August.

120. *Acacia hylonoma Pedley. **Type:** Cook District: East of May Peak, Yarrabah Aboriginal Reserve, 16°57′S 145°54′E, Dec 1972, *Webb & Tracey* 10764 (BRI, holo).

Tree to 15 m tall; branchlets acutely angular reddish lenticellular glabrous; stipules deltoid *ca* 0·5 mm long. Phyllodes glabrous, straight or curved, ± acute, widest at or below the middle, 8–13·5 cm long, 7–16(–25) mm wide, 5–10(–16) times as long as wide; up to 10 longitudinal nerves 1·5–2 mm apart with less prominent loosely anastomosing secondary nerves between them; gland small, 5–15 mm from the base; pulvinus ± flat, 1–2 mm long. Inflorescence axillary, usually consisting of two pairs of heads, one head of each pair maturing before the other (evidently a condensed raceme); heads *ca* 25–flowered; peduncles 5–8 mm long, glabrous. Flowers 5–merous; calyx glabrous, 1·1–1·2 mm long, eventually separating into distinct lobes; corolla 1·8–2 mm long, 1·6 times as long as the calyx; stamens *ca* 2·5 mm long; ovary glabrous. Pods *ca* 9 cm long, 12 mm wide, valves glabrous, papery. Seeds longitudinal, 5 mm long, 3·5–4 mm wide; areole large, constricted but open; funicle slightly thickened and folded, but not expanded beneath seed.

***Acacia hylonoma** Pedley, species nova affinis *A. simsii* A. Cunn. ex Benth. phyllodiis floribus leguminibus seminibusque grandioribus differt. Typus: *Webb & Tracey* 10764 (BRI, holotypus).

Arbor usque 15 m altus; ramuli acutangulati rubescentes lenticellulati glabri; stipulae deltoideae circa 0·5 mm longae. Phyllodia glabra, recta curvatave, ± acuta, latissima ad vel infra medium, 8–13·5 cm longa, 7–16(–25) mm lata, 5–10(–16)–plo longiora quam lata; nervi longitudinales (usque 10) 1·5–2 mm distantes inter eos nervis secundariis prominentibus laxe anastomantibus praediti; glans parva e basi 5–15 mm posita; pulvinus ± planus 1–2 mm longus. Inflorescentia axillaris plerumque ex paribus duobus capitulorum circa 25–flororum, capitulo uno utrique excreto ante alterum constans (perspicue racemus condensatus); pedunculi glabri 5–8 mm longi. Flores 5–meri; calyx glaber 1·1–1·2 mm longus demum in lobos distinctos secedens; corolla 1·8–2 mm longa, quam calyx 1·6–plo longior; stamina circa 2·5 mm longa; ovarium glabrum. Legumen circa 9 cm longum, 12 mm latum, valvis glabris chartaceis. Semina longitudinales 5 mm longa, 3·5–4 mm lata; areola ampla, aperta sed basi constricta; funiculus leviter crassus plicatusque autem sub semine non expansus.

Cook District: State Forest Reserve 933, *ca* 17°S 145°50'E, SE of Cairns, Aug 1973, *Sanderson* 202 (QRS), Feb 1975, *Hyland* 3173 (R.F.K.) & 8011 (QRS).

Acacia hylonoma is one of the few Australian species of *Acacia* found in rainforest. It has been collected only south-east of Cairns where it reaches 15 m tall and 20 cm d.b.h. The type collection includes flowers and fruit. The venation of the phyllodes and structure of the inflorescence indicate a close relationship with *A. simsii* and *A. ramiflora.*

121. *Acacia legnota Pedley. **Type:** Cook District: North shore of Endeavour River, Cooktown, Jun 1968, *Brass* 33843 ex Flecker Herbarium of North Queensland Naturalists' Club (BRI, holo; K, QRS, iso).

Small tree; branchlets somewhat angular, glabrous. Phyllodes strongly falcate, broadest above the middle, attenuate at the base, acute or obtuse mucronulate, glabrous 12–18 cm long 10–17 mm wide, 9–14 times as long as wide; about 7 prominent longitudinal nerves, sometimes with faint ones between and faint oblique anastomosing nerves; gland at base or up to 2 cm from the base; pulvinus wrinkled, 3–4 mm long. Heads of *ca* 35 flowers on glabrous peduncles 20–25 mm long, the peduncle a single branch, subtended by a small concave bract, arising from an axis 3–7 mm long; occasionally the axis growing out into a leafy shoot, 2 or 4 axes in each axil. Flowers 5–merous; calyx lobes narrowly spathulate, ± free, 1·2–1·3 mm long, a few hairs near the top; corolla lobes ± free narrowly obovate, glabrous, 1·6 mm long; stamens *ca* 3 mm long; ovary glabrous. Pod flat glabrous, up to 12 cm long, *ca* 11 mm wide with a well defined slightly raised pale margin up to 2 mm wide when mature. Seeds longitudinal suboval, 4·5–5 mm long, *ca* 4 mm broad; areole large, closed; funicle once folded forming cupular aril. (Fig 9f, inflorescence).

Cook District: Aboriginal Reserve 1, between McIvor River & C. Flattery, 15°05'S 145°15'E, Nov 1972, *Hyland* 6517 & 6540.

Acacia legnota is known from two localities between Cooktown and Cape Flattery. In both places it occurs in heath on sand. Flowers have been collected in June, and fruits in November.

The illustration of *A. complanata* of Britten (Bot. of Cook's Voyages 1.t.85. 1900) is in fact *A. legnota.* The pale margin of the pod is not apparent in the plant, probably because the pods are immature. *A. legnota* resembles *A. homalocladа* which has shorter phyllodes with fewer longitudinal nerves and somewhat smaller pods.

Acacia legnota* species nova affinis *A. homalocladae* F. Muell. phyllodiis longioribus nervis pluribus praeditis et leguminibus aliquantum parvioribus differt. **Typus: *Brass* 33843. (BRI, holo; K, QRS, iso).

Arbor parva; ramuli aliquantum angulares, glabri. Phyllodia valde falcata, supra medium, latissima, versus basin attenuata, acuta obtusave mucronulata glabra, 12–18 cm longa 10–17 mm lata, 9–14-plo longiora quam lata, circa 7 nervis longitudinales prominentibus interdum inconspicuis inter eos et obliquis anastomantibus inconspicuis praedita; gland basi vel usque 2 cm e basi, pulvinus rugosus 3–4 mm longus. Capitula circa 35–florum in pedunculis glabris 2–2·5 cm longis portata; pedunculus solitarius a bractea parva concava subtentus ex axe enascens; interdum axes (2 vel 4 in quoque axilla) in surculum foliaceum crescentes. Flores 5–meri; calycis lobi anguste spathulati ± liberi, 1·2–1·3 mm longi, prope apicem pilis aliquot vestiti; corollae lobi ± liberi anguste obovati glabri 1·6 mm longi; stamina circa 3 mm longa; ovarium glabrum. Legumen planum glabrum usque 12 cm longum, circa 1·1 mm latum, ubi maturum margine prominenti leviter elevato pallido usque 2 mm lato praeditum. Semina longitudinalia subovalia, 4·5–5 mm longa, circa 4 mm lata; areola magna inaperta; funiculus semel plicatus arillem cupularem faciens.

122. Acacia binervata DC., Prod. 2:452 (1825). **Type:** *Sieber* 504 (G-DC, holo). *A. umbrosa* A. Cunn. ex G. Don, Gen. Syst. 2:405 (1832); Bot. Mag. 61.t. 3338 (1834). **Type:** not seen.

Bushy tree to 6 m; branchlets angular glabrous. Phyllodes rather thin, ± straight, obovate, or ovate, acute, 7–8 cm long, 1·5–2 cm wide, 4–8 times as long as broad; 2 longitudinal nerves prominent and a number of finer oblique nerves anastomosing; gland prominent swelling and a small orifice on the margin about 1 cm from the base, often touching the upper longitudinal nerve or with a connecting nerve running to it from the upper longitudinal nerve. Heads of 15–25 flowers in glabrous axillary racemes with up to 10 branches, sometimes growing out into leafy shoots, the axis 4–5 cm long, the branches 6 mm long. Flowers 5–merous; calyx *ca* 1 mm long, membranous with obtuse, sparsely hairy lobes about as long as the tube; corolla glabrous, *ca* 2 mm long, divided to the base; stamens *ca* 5 mm long; ovary glabrous. Pod flat, not seen mature, up to 12 cm long *ca* 1 cm broad, very similar to that of *A. penninervis*. Seeds longitudinal encircled by the funicle.

MORETON DISTRICT: Lower Springbrook, *ca* 28°10'S 153°15'E, Oct 1963, *Hockings*.

A. binervata is common along almost the entire New South Wales coast but in Queensland it has been collected only from Mt Tamborine and Springbrook, in the extreme south-eastern part of the state, where it flowers in October.

Except that it has two longitudinal nerves, *A. binervata* bears a remarkable resemblance to *A. penninervis*. The texture of the phyllodes, the gland, the indefinite racemes and the pod are all similar. It is conceivable that some members of the *Plurinerves* should in fact be referred to the *Phyllodineae* (see p. 84).

123. Acacia wardellii Tindale, Contrib. N.S.W. Nat. Herb. 4(3): 139 (1970). **Type:** Thomby Range, SE of Surat, May 1955, *Gordon* 3039 (NSW, holo; BRI, iso).

Shrub to *ca* 5 m tall with pale bark similar to that of *A. bancroftii*; branchlets ± terete, glabrous. Phyllodes ovate or oblong, obtuse or acute, tapering at the base, usually curved, 11·5–15·5 cm long, 2–2·5(–3·5) cm wide, 4–7 times as long as wide; 2 prominent longitudinal nerves and less prominent oblique penninerves forming coarse reticulum; lower gland prominent, elongated, basal or up to 1 cm from the base, 1–3 other smaller but prominent glands with thick rim and small orifice on the margin or at the top of a projection from the phyllode (cf. *A. bancroftii*); pulvinus 5–10 mm long. Heads of about 30 flowers in axillary racemes, the axis scurfy, up to 4 cm long, branches with minute appressed pubescence, *ca* 5 mm long. Flowers 5–merous; calyx 0·6 mm long, membranous, pubescent in the upper half with lobes 0·2–0·3 mm long; corolla thin *ca* 1·3 mm long; stamens *ca* 3 mm long; ovary glabrous. Pods up to 8 cm long, 6 mm wide, flat, raised over seeds and slightly contracted between them. Seeds longitudinal, 6 mm long, 3·4 mm wide, rather thick; areole elongate, open; funicle thick, passing around top of seed, along side opposite the placenta, forming clavate aril beneath seed.

DARLING DOWNS DISTRICT: "Rockwood" *ca* 20 miles [32 km] SW of Chinchilla, Nov 1969, *Pedley* 3011.

Acacia wardellii occurs naturally on shallow weathered sandstone in eucalypt woodland in the Thomby Range south-east of Surat and south-west of Chinchilla. It was brought into cultivation by Mr D. M. Gordon in the 1950's and is now cultivated to some extent and may have become naturalized in places.

A. wardellii resembles *A. bancroftii*, especially in habit, and glands of the phyllodes often on projections, and in pod. It is another species that could possibly be referred to the *Phyllodineae.*

124. Acacia oraria F. Muell., Fragm. 11:66 (1879); Pedley, Contrib. Qd Herb. 18:5 (1975). **Syntypes:** Rockingham Bay, *Dallachy* (MEL; BM, iso); Trinity Bay, *Bailey* (BRI, iso).

A. oraria F. Muell. var. *amblyphylla* Domin, Biblioth. Bot. 89:265 (1926). **Type:** In silvis mixtis apud opp. Cairns solo arenoso, Dec 1909, *Domin* PR, holo).

Spreading tree about 10 m tall with fibrous fissured bark; branchlets angular, covered with whitish bloom. Phyllodes rather thick obovate falcate, lower margin ± straight, upper curved, broadest above the middle, attenuate at the base, obtuse, at first covered with white bloom, glabrous 5–8(–10) cm long, (10–)15–35(–45) mm wide, 2–3·5(–6) times as long as wide; three prominent longitudinal nerves with about six secondary longitudinal ones, reticulately nerved between them forming ± square vein islands; gland basal, small but with a well defined rim; pulvinus 3–6 mm long. Heads, at first covered in white bloom, of 30–40 flowers in axillary or sometimes terminal 3–5 branched racemes, sometimes growing out into leafy shoots, the axis 8–18 mm long, peduncles 4–7 mm long. Flowers 5–merous; calyx lobes united to about the middle, 1–1·4 mm long, oblong, obtuse; corolla lobes rather narrow, united to the middle, 1·5–1·9 mm long, 1·3–1·8 times as long as the calyx; stamens 3–4 mm long; ovary somewhat scurfy. Pod flat with nerved margins, twisted or coiled, to 12 cm long, 9–15 mm wide, scurfy; seeds longitudinal *ca* 4 mm long and 3 mm broad; areole rather large, closed; funicle translucent, red, thickened, passing completely round seed then folded back on itself and considerably thickened to form the aril, occasionally folded only 3/4 way around seed.

COOK DISTRICT: Laura River, Aug 1967, *Hyland* 3907. NORTH KENNEDY DISTRICT: Edgecombe Bay, *Michael.*

Acacia oraria extends from Bowen to Friday Island. It has also been collected from Timor but is not yet recorded from either the Northern Territory or New Guinea. In Queensland it occurs on sand along beaches or, less commonly, along streams. Flowers have been collected from January to June and mature fruit in August. Trees of *A. oraria* have dense greyish green crowns similar in general appearance to those of *A. aulacocarpa.* The white bloom that covers the branchlets and developing inflorescences is noteworthy.

125. Acacia flavescens A. Cunn. ex Benth., London J. Bot. 1:381 (1842). **Type:** Percy Islands, June $\frac{318}{1819}$, *Cunningham* (K, holo).

A. flavescens A. Cunn. ex Benth. var. *nobilis* Domin, Biblioth. Bot. 89:818 (1926). **Lectotype:** in xerodrymis apud Cape Grafton, Jan 1910, *Domin* '5126' (PR).

Tree to about 10 m tall with rough furrowed somewhat shaggy bark, branchlets angular with moderately dense **stellate** hairs; young tips golden. Phyllodes ovate, falcate, acute (usually long tapering) becoming glabrous but usually with some stellate hairs persisting near the base; 3 longitudinal nerves

prominent, the upper two ending at the margin at an indentation, usually associated with a gland, the lower ending at the apex, finely transversely reticulate, the vein islands rather large, 9–24 cm long, (1–)2–4(–5·5) cm wide, 3–6(–9·5) times as long as wide, 11 cm wide and 1·5 times as long as wide on sterile shoots; basal gland prominent with distinct rim and elongate orifice, 2 mm long, three or more smaller, but conspicuous glands in indentations along upper margin, occasionally glands on small projections; pulvinus rather long. Heads of (30–)40–50 flowers in terminal, sometimes leafy, panicles, sometimes compound, up to 30 cm broad, made up of *ca* 5–noded racemes *ca* 5 cm long with about 4 peduncles, 10–15 mm long, at each node, the whole clothed with dense yellowish hairs. Flowers 5–merous; calyx 1·1–1·3(–1·6) mm long with lobes 0·3–0·5 mm long, entirely pubescent or pubescent only on lobes; corolla 1·7–1·9(–2·1) mm long with pubescent lobes 0·6–0·8 mm long, 1·3–1·6 times as long as the calyx; stamens 4–5 mm long; ovary densely pubescent especially in upper half or rarely merely scurfy. Pods flat, slightly winged, shining, with transverse veins and scattered hairs when young, 6–12 cm long, 1·5–2 cm wide. Seeds transverse, *ca* 6 mm long, 4 mm wide; areole large open; funicle ribbon-like, folded and finally expanded into cupular aril. (Fig. 7j, position of glands).

COOK DISTRICT: 14 miles [22 km] WNW of Cooktown, Aug 1966, *Story* 7982. NORTH KENNEDY DISTRICT: between Townsville and Rollingstone, Mar 1933, *White* 8989. SOUTH KENNEDY DISTRICT: Grasstree Goldfield, NE of Sarina, May 1927, *Francis*. LEICHHARDT DISTRICT: Blackdown Tableland, Aug 1964, *Gittins* 894. PORT CURTIS DISTRICT: Byfield, Sep 1931, *White* 8180. WIDE BAY DISTRICT: Tin Can Bay, Sep 1943, *White* 12274. MORETON DISTRICT: base of Mt Coolum, Apr 1945, *Clemens*.

Acacia flavescens ranges from Cape York to about Coolum on the southern coast of Queensland. It is often the commonest understory species of eucalypt forest on sandy soils near the sea. It flowers from about April to June and pods mature from September to December.

A. flavescens resembles other species of the Dimidiatae group of *Plurinerves* but it and *A. leptoloba* differ from all other species of *Acacia* known to me in having distinctly stellate hairs.

126. Acacia bakeri Maiden, Proc. Linn. Soc. N.S.W. 20:337 (1895). **Syntypes:** Mullumbimby, Oct 1894, *Baker* 1258 (NSW; BM, E, K, iso); Mullumbimby, Sep 1894, *Bäuerlen* (BRI, iso).

Tree to 35 m tall, 0·8 m d.b.h.; branchlets ± terete, glabrous. Phyllodes elliptic or ovate, acute or obtuse, slightly curved at the base, abruptly contracted into a pulvinus 1–2 mm long; 5–8·5(–12) cm long, 15–25(–45) mm broad, 2·5–5 times as long as broad, larger on sterile shoots; gland prominent, a distinct swelling of the margin with a small orifice, 6–10(–15) mm from the base, sometimes with a connective nerve to the base; 3–4 prominent longitudinal nerves with less definite secondary penninerves forming coarse reticulum (when the phyllode is broad, the secondary nerves are almost perpendicular to the main nerves). Heads of 10–15 flowers in glabrous racemes, the axis 3–6 cm long, the branches in up to 4 pairs (occasionally 3's or 4's) 5–10 mm long. Flowers 4–merous; calyx lobes free, 0·8–0·9 mm long, oblong or obovate, incurved at the top, pubescent; corolla 1·6–2 mm long, divided to the middle, ± hirsute; ovary glabrous. Pod flat, very slightly constricted between the seeds, with a broad margin, coarsely reticulately nerved, up to 12 cm long, *ca* 12 mm wide. Seeds longitudinal, not seen mature, but the funicle filiform, neither folded nor thickened.

WIDE BAY DISTRICT: Kin Kin, *Francis*. MORETON DISTRICT: Cedar Creek, May 1923. *White* 1945.

Acacia bakeri (marblewood) attains the largest size of all species of *Acacia* in Australia. In New Guinea, both *A. aulacocarpa* and *A. crassicarpa* may exceed 30 m in height, but in Australia they are usually much smaller. *A. bakeri* occurs in rainforests and on the margins of rainforests from the North Coast district of New South Wales to the Maryborough district. It is less common now than it was earlier this century as rainforests have been extensively cleared. No specimen has been added to the Queensland Herbarium from Queensland in the last forty years, and it is possible that the species is in danger of extinction.

The straight, rather short, phyllodes with all major nerves extending almost to the apex and the 4–merous flowers set *A. bakeri* apart from other members of the Dimidiatae group of the *Plurinerves* which it otherwise resembles.

Two syntypes are mentioned in the protologue, but it is not clear from the specimens examined in various hervaria, what these are. A specimen segregated as type at NSW was collected by Baker in October 1894, whereas specimens at BM, E and K all bear the date September 1894. It is likely, however, that all are part of the same collection.

127. Acacia hemignosta F. Muell., J. Proc. Linn. Soc. Bot. 3:134 (1859). **Syntypes:** Point Pearce, *Mueller* 87 (K, iso); Gulf of Carpentaria, *Mueller* 34 (K, iso).

A. cloncurrensis Domin, Biblioth. Bot. 89:262 (1926). **Type:** apud opp. Cloncurry, Mar 1910, *Domin* (PR, holo).

Tree to about 10 m tall; branchlets ribbed, glabrous, sometimes glaucous. Phyllodes coriaceous, slightly falcate, broadest above the middle, obtuse, attenuate at the base, glabrous, greyish, (4·5–)6–8·5 cm long, (4·5–)9–19 mm wide, 4–7 times as long as wide; three conspicuous longitudinal nerves, faint reticulate nerves between them, the vein-islands ± square; gland conspicuous but not large, rimmed with a small orifice, a little distance from the base; pulvinus 1–2 mm long. Heads of 40–50 flowers in glabrous axillary or terminal leafy racemes, the lower heads opening first, the axis (3·5–)5–6(–10) cm long, the peduncles in 5–8 pairs, 6–12 mm long. Flowers 5–merous; calyx lobes free (0·7–) 0·9–1·1 mm long, a narrow membranous stipe and a glabrous or pubescent ovate acute lamina *ca* 0·15 mm wide; corolla lobes free, 1·4–1·6(–2) mm long, 1·5–2 times as long as the calyx, obovate or oblong, acute; stamens 2·5–3·5 mm long; ovary glabrous. Pod flat membranous with a distinct marginal wing, *ca* 7 cm long, *ca* 1 cm wide; seeds longitudinal, thick, *ca* 5·5 mm long, 4 mm wide; areole small, circular, closed; funicle not folded or thickened.

BURKE DISTRICT: 30 miles [48 km] E of Doomadgee Mission Stn, Jun 1966, *Pedley* 2071. COOK DISTRICT: 86 miles [138 km] S of Coen, Aug 1966, *Story* 7960.

Acacia hemignosta is widely spread in northern Australia. It extends from the Kimberley District of Western Australia through the northern part of the Northern Territory and the Gulf country to the southern part of Cape York Peninsula and drier parts of the Atherton Tableland. It reaches the coast a little north of Cairns. Though widely spread, *A. hemignosta* is nowhere very common. It occurs on a range of soils usually in eucalypt woodland. The main period of flowering is from June to August and fruits mature from September to November.

There is considerable range of variation in width and texture of phyllodes and width of pods throughout the species' whole range but in Queensland the range of variation is not great. *A. cloncurrensis* is well within the range of variation of the species.

A. hemignosta has phyllodes with distinctive reticulating veins unlike any other species of sections *Plurinerves* or *Juliflorae*. Its indeterminate raceme of heads and broad membranous pod are also unusual characters in the *Plurinerves*.

128. *Acacia leptoloba Pedley. **Type:** Cook District: 5 km S of Laura River, 68 km SW of Cooktown, Apr 1975, *MacDonald* 1637 & *Batianoff* (BRI, holo; CANB, K, iso).

Spreading shrub to 5 m tall; branchlets glabrous, sometimes glaucous. Phyllodes glabrous, obtuse 7–12 cm long, 18–33 mm wide, 2·5–5(–7) times as long as wide, lower margin ± straight, upper curved, prominent marginal and 3 longitudinal nerves, the upper two uniting with the marginal nerve, the lowest extending to about the apex, secondary nerves strongly anastomosing; slightly elongate gland at the base, 1–2 smaller ± circular glands on the margin at junction of upper longitudinal nerves; pulvinus (6–)10–15 mm long. Heads of *ca* 40 flowers in axillary racemes, the axis up to 13 cm long with about 7 nodes but usually shorter, usually two peduncles up to 15 mm long subtended by obtuse ciliate bracts, very scattered yellow **stellate** hairs on bracts and at the top of the developing axis; racemes sometimes branched, sometimes arranged in terminal panicles. Flowers 5–merous; calyx ribbed, 1·3–1·5 mm long with lobes *ca* 0·5 mm long with an indumentum of yellow hairs; corolla 2–2·5 mm long, 1·5–1·6 times as long as the calyx, shortly lobed with yellow hairs on the lobes; stamens *ca* 4 mm long; ovary glabrous. Pod 4–8 cm long, *ca* 2 cm wide, flat, glabrous with thin, transversely reticulately veined valves. Seeds transverse, 5·5–6 mm long, 3–3·5 mm wide; areole large, open; funicle folded about 5 times forming cupular aril. (Fig. 8i, phyllode).

COOK DISTRICT: Quinquin Creek SE of Laura, May 1975, *Byrnes* 3469; Parada, Dec 1965, *Bates* 178; Oakey Creek, Irvinebank-Emuford, Jan 1972, *Hyland* 5810.

Acacia leptoloba ranges from about Laura to Herberton on sandy soils on hills and along streams. It flowers from about December to April.

***Acacia leptoloba** Pedley, species nova affinis *A. flavescentis* A. Cunn. ex Benth. et *A. platycarpae* F. Muell. ab illa surculis subglabris et phyllodiis glabris obtusis, a hac pilis stellatis et leguminibus tenuibus differt. **Typus:** *McDonald* 1637 & *Batianoff* (Holotypus: BRI; isotypi: CANB, K)

Frutex expansus usque 5 m altus; ramuli glabri interdum glauci. Phyllodia glabra obtusa 7–12 cm longa, 8–13 mm lata, 2·5–5(–7)–plo longiora quam lata, margine infero ± recto et supero curvato; nervo marginali prominenti et nervis tribus longitudinalibus, duobus superis cum nervo marginali junctis, imo ad apicem fere extenso, nervis secundariis valde anastomantibus praedita; glans leviter elongata basalis, glandes 1–2 parviores ± circulares in margine ad nervorum longitudinalium superorum juncturam; pulvinus (6–)10–15 mm longus. Capitula circa 40–flora in racemis axillaribus axe usque 13 cm longo, circa 7–nodo autem vulgo breviori, vulgo in quoque nodo pedunculis duobus usque 15 mm longis a bracteis obtusis ciliatis subtentis, pilis sparsissimis flavis stellatis in bracteis et apice axis evolutentis praeditis; racemi interdum ramosi, interdum in paniculam terminalem dispositi. Flores 5–meri; calyx costatus 1·3–1·5 mm longus lobis circa 0·5 mm longis indumento pilorum flavorum; corolla 2–2·5 mm longa calyce 1·5–1·6–plo longior, breviter lobata pilis flavis in lobis; stamina circa 4 mm longa; ovarium glabrum. Legumen 4–8 cm longum, circa 2 cm latum, planum glabrum valvis tenuibus transverse reticulate venosis. Semina transversa 5·5–6 mm longa, 3–3·5 mm lata; areola ampla aperta; funiculus circa quinquies plicatus arillum cupulatum faciens.

The species has generally been confused with *A. platycarpa* which has larger woody pods with larger seeds and somewhat more coarsely reticulate venation. The thin pods and the presence of yellow stellate hairs indicate a closer relationship with *A. flavescens.*

129. Acacia platycarpa F. Muell., J. Proc. Linn. Soc. Bot. 3:145 (1859), Fragm. 11:67 (1880); Benth., Fl. Aust. 2:391 (1864), *pro syn.;* Turrill, Kew Bull. 1922:298 (1922). **Syntype:** Gulf of Carpentaria, *Mueller* 8 (MEL; K, iso).

A. fragrantissima Domin, Biblioth. Bot. 89:264 (1926). **Type:** In collibus arenosis Dividing Range dictis apud opp. Pentland, Mar 1910, *Domin* PR, holo).

Tree to 10 m, but in the southern part of its range at least, usually a shrub; branchlets terete or angular, glaucous or pruinose but always glabrous. Phyllodes oblong, obtuse, lower margin ± straight, upper curved, often with indentation(s) in upper margin where upper nerve(s) meet it, glabrous, sometimes glaucous, 5–14 cm long, (12–)16–30(–36) mm wide, (3–)3·5–6 times as long as wide; three prominent longitudinal nerves, often running into ventral margin up to 2 cm from the base, the upper sometimes meeting or approaching close to dorsal margin in upper part; secondary nerves finer, forming a rather fine reticulum, the vein islands small, approximately square; gland inconspicuous or not, a yellowish rim and small slit, usually with 1 or 2 smaller but projecting glands on margin about the middle, often associated with ending of major longitudinal nerves; pulvinus to 1 cm long. Heads of fewer flowers in simple axillary racemes, the axis *ca* 6 cm long with peduncles *ca* 12 mm long in groups of 2–4 at the nodes; calyx 1 mm long, pubescent in the upper half with lobes 0·3 mm long, becoming free; corolla 1·8 mm long, yellow hairy in the upper half with lobes *ca* 0·6 mm long; stamens probably less than 4 mm long; ovary glabrous. Pod flat, rather woody and tardily dehiscent, glaucous or shining, 5–12 cm long, 2–3 cm broad, obscurely reticulately nerved, with a narrow or broad (up to 4 mm wide) wing. Seeds transverse, 9–10 mm long, 8 mm wide, *ca* 3·5 mm thick, immersed in inner tissue of valve; areole large, almost closed; funicle thick, folded and expanded into cup-shaped aril beneath seed (Fig. 101, pod).

BURKE DISTRICT: 32 miles [50 km] NE of Richmond, near "Ravenscourt", Jun 1954, *Lazarides* 4484. MITCHELL DISTRICT: 14 miles [22 km] E of Prairie, Jul 1954, *Lazarides* 4547; 13 miles [20 km] E of Jericho, Sep 1956, *Burbidge* 5544. SOUTH KENNEDY DISTRICT: 14 miles [22 km] S of Alpha, Nov 1968, *Pedley* 2813.

Acacia platycarpa ranges from the Cambridge Gulf region of Western Australia through the northern part of the Northern Territory to the Alpha–Jericho area. There is a considerable disjunction in its range between Settlement Creek and Normanton. It is apparently an extremely variable species, and, in fact, may consist of a number of closely related taxa. Many more collections, particularly of flowering material, are necessary however, before these taxa can be accurately circumscribed, and named. The species flowers during the summer and not much flowering material has been collected. Variation in floral and inflorescence characters is therefore not known in detail. There is also a large range of variation in plants from the Northern Territory. Some variants approach *A. dunnii.*

Bentham referred *A. platycarpa* to *A. sericata.* He was followed by Mueller though it is uncertain whether Mueller saw type material of *A. sericata.* Turrill, because of the pubescent phyllodes and wingless pods of *A. sericata,* considered it to be distinct from *A. platycarpa.* Characters of the pod must be used with caution as immature pods are thin with a distinct wing, whereas mature ones are thicker and apparently without a wing. Nevertheless, *A. sericata* appears to be distinct from *A. platycarpa.* It is restricted to the Kimberley district of Western Australia and perhaps the northern extremity of the Northern Territory.

I have seen only one syntype of *A. platycarpa, Mueller* 8. It bears immature pods, and comparison with variants distinguished by attributes of the flowers and inflorescences is therefore difficult. The position of *A. fragrantissima* is still somewhat uncertain.

130. Acacia rothii F. M. Bailey, Qd Agric. J. 6:39.t.161 (1900), Qd Flora 2:250 (1900). **Type:** mouth of the Batavia River, *Roth* (BRI, holo).

Tree *ca* 10 m tall with rough dark bark; branchlets coarse, angular, glabrous. Phyllodes curved, narrow oblong, obtuse, 15–25(–30) cm long, 15–25(–30) mm wide, (4–)9–13 times as long as wide, tapered at base to prominently wrinkled pulvinus *ca* 1 cm long; 2–3 prominent longitudinal nerves and oblique less prominent secondary nerves forming coarse reticulum; gland prominent, with thick rim and small orifice, at the base and one or two smaller ones often present above the middle. Heads of *ca* 50 flowers in glabrous axillary racemes, axis *ca* 7 cm long and up to 8 branches *ca* 8 mm long. Flowers 5–merous; calyx *ca* 1 mm long, membranous, pubescent, with obtuse lobes *ca* 0·2 mm but probably ultimately free; corolla *ca* 2 mm long, lobed to the middle; stamens *ca* 4 mm long; ovary glabrous. Pod flat, woody and tardily dehiscent, with broad acute margin, glaucous, transversely reticulately veined, 9–12 cm long, 3–4 cm wide. Seeds transverse immersed in tissue of valves, *ca* 8 mm long, 5 mm broad, thick, with large open areole; funicle thickened folded and expanded to form cupular aril beneath seed.

Cook District: Bamaga, May 1962, *Webb & Tracey* 5975.

Acacia rothii is restricted to Cape York Peninsula, north of about Laura, where it is common, mainly on loamy and sandy soils in eucalypt communities but occasionally in vine thicket. Pods remain on the plant for a long period and specimens with fruits have often been collected. I have seen only one collection with abundant flowers. This was collected in June.

The large woody pods and large transverse seeds are similar to those of *A. platycarpa,* but in other characters *A. rothii* resembles *A. propinqua* from the northern part of the Northern Territory. *A. propinqua,* however, has smaller phyllodes and longer racemes. Its pods are unknown.

131. Acacia melanoxylon R.Br. ex Ait., Hort. Kew ed. 3 5:462 (1813); Benth., Fl. Aust. 2:388 (1864); F. M. Bailey, Qd Flora 2:498 (1900); Maiden, For. Fl. N.S.W. 2:103 (1907). **Type:** Port Dalrymple, Jan 1804, *Brown* (BM, holo).

A. arcuata Sieb. ex Spreng., Syst. Veg. 3:135 (1826). **Type:** not seen.

Tree to 15 m tall (in Queensland, taller farther south), with somewhat scaly bark; branchlets angular, indumentum varying from densely pubescent to none; young tips dark; stipules caducous, up to 1·5 mm long. Phyllodes usually rather

membranous, not coriaceous, acute, apiculate, broadest at or above the middle tapering to the pulvinus which is short or indefinite, (6·5–)8–13(–14) cm long, 7–20 mm wide, 4–12(–16) times as long as wide; longitudinally nerved, 3–5 prominent with many secondary nerves, anastomosing, the junctions prominent, particularly on more coriaceous phyllodes from plants from exposed situations; gland not large, 1–10 mm from the base. Heads of 30–50 flowers in glabrous, scurfy or sparsely to moderately pubescent 3–5(–8) branched racemes, the axis (2–)6–18(–40) mm long, branches (2–)5–10 mm long. Flowers 5–merous; calyx 0·8–1·1(–1·3) mm long consisting of a membranous tube and pubescent or scurfy thicker obtuse lobes 0·1–0·2 mm long; corolla lobes thick, glabrous, 1·8–2·1 mm long, united in the lower third, 1·8–2·1 times as long as the calyx; stamens 4–5 mm long; ovary glabrous or pubescent. Pod coiled, up to 10 cm long, 3·5–6·5 mm wide, valves rather thick and somewhat shiny. Seeds longitudinal, 3–4 mm long, 1·7–3 mm wide; areole large and open but not conspicuous; funicle slender, running completely round the seed then completely folded back on itself and again folded back on itself to the hilum, or rarely running to top of seed and then recurved, that is, not completely encircling the seed.

COOK DISTRICT: Mt Spurgeon, Sep 1936, *White* 10670. SOUTH KENNEDY DISTRICT: Sarina, Jul 1963, *Jones*. WIDE BAY DISTRICT: Kin Kin, Dec 1919, *Francis*. DARLING DOWNS DISTRICT: Spring Creek near Killarney, Mar 1931, *Hubbard* 5798. MORETON DISTRICT: Springbrook, Sep 1930, *Hubbard* 4262.

Acacia melanoxylon ranges from Mt Lewis on the northern part of the Atherton Tableland to the McPherson Range in the south, and beyond Queensland southward along the highlands to Tasmania and Victoria and westward to the Mt Lofty Ranges. In view of its wide range it shows remarkably little variation. In Queensland it occurs on rainforest margins and on in creeks in areas of high rainfall where soils are fertile. Flowering and fruiting seems to occur throughout the year but most flowering specimens have been collected in the period November to March.

A. melanoxylon and *A. implexa* have often been confused. Bailey, cited the locality Stanthorpe and refers to the vernacular name "Lightwood". Both locality and name apply to *A. implexa*, which has often glaucous branchlets, phyllodes more attenuate at the base and seeds not encircled by the funicles. Bentham and Maiden referred *A. brevipes* A. Cunn. to *A. melanoxylon* and Domin (Biblioth. Bot. 89:263 (1926)) reduced it to a variety of *A. implexa*. *A. brevipes* is conspecific with the extra-Australian species *A. heterophylla*.

132. Acacia implexa Benth., London J. Bot. 1:368 (1842). **Type:** Ravines of Shoalhaven River, Apr 1824, *Cunningham* (K, holo).

Tree to *ca* 8 m tall, branches sometimes pendulous; branchlets glaucous, ± terete or slightly angular. Phyllodes curved, obtusish, long attenuate at the base, glabrous, (9–)11–16(–19) cm long, 6–16(–25) mm wide, (5–)9–18(–22) times as long as wide; 3 prominent longitudinal nerves with rather widely spaced anastomosing secondary nerves, the junctions prominent; gland basal, sometimes inconspicuous; pulvinus 2–7 mm long. Heads of 30–50 flowers in 4–8 branched glabrous axillary racemes, sometimes in panicles, axis 10–30(–40) mm long, peduncles 6–13 mm long. Flowers 5–merous; calyx membranous, 0·7–1 mm long, truncate, undulate or with short obtuse fimbriate lobes; corolla glabrous, 1·5–2·2 mm long, 2–2·2 times as long as the calyx, lobed to about the middle; stamens 3–4 mm long; ovary scurfy and with a few scattered long hairs. Pod flat, raised over the seeds, coiled and twisted, glabrous, somewhat glaucous, up to 20 cm long, 4–7 mm wide. Seeds longitudinal, *ca* 4·5 cm long, 2·5 mm wide; areole open; funicle broad, once folded beneath the seed.

NORTH KENNEDY DISTRICT: Herberton, Jan 1912, *Kenny*. PORT CURTIS DISTRICT: base of Mt Archer, E of Rockhampton, Oct 1973, *Beattie*. LEICHHARDT DISTRICT: near Wandoan, Nov 1930, *Hubbard* 5050. DARLING DOWNS DISTRICT: near Pittsworth, 27°38′S 151°38′E, Dec 1969, *Pedley* 3066. WIDE BAY DISTRICT: Imbil, Dec 1917, *Weatherhead*. BURNETT DISTRICT: Edenvale Hill near Kingaroy, Dec 1947, *Michael* 3081. MORETON DISTRICT: 18 km E of Nanango, 26°32′S 152°11′E, Dec 1972, *Pedley* 4004.

Acacia implexa (lightwood) is common in the eastern part of the Darling Downs and southern part of the Moreton district but it extends as far north as Herberton. It occurs on various soil types in eucalypt communities and has probably been under-collected in the tropical part of the state. Its main flowering period is December-January, but flowers are sometimes produced at other times of the year.

133. Acacia pravifolia F. Muell., Fragm. 1:4 (1858), J. Proc. Linn. Soc. Bot. 3:117 (1859), Sec. Census Aust. Pl. (1889) 77; Benth., Fl. Aust. 2:378 (1864), *pro syn.*; J. M. Black, Fl. South Aust. ed. 1. 285 (1924), *pro syn.*; Fl. South Aust. ed. 2. 423 (1948). **Syntypes:** Elders Range, Oct 1851, *Mueller* (ex Herb. Sonder) (MEL; K, iso); Crystalbrook, *Mueller* (MEL; K, iso).

Shrub with terete slightly ribbed branchlets with indumentum of erect dense white hairs 0·5–0·8 mm long. Phyllodes sessile, with indumentum of moderately dense, long, tubercle-based hairs, broadly triangular, the dorsal margin rounded, 3–7 mm long, 2·8–7 mm wide, about as long as wide, abruptly contracted into a point, the prolongation of the main nerve, with 2–3 branched nerves in the upper part of the phyllode; stipules linear or setaceous, 1·2–2·4 mm long. Heads slightly elongate, 9(–20) flowered, on glabrous or slightly hairy axillary peduncles as long as or slightly longer than the phyllodes, with a pair of basal bracts similar to the bracteoles; bracteoles brown, concave, obtuse, slightly longer than the calyx. Flowers 5–merous; calyx 0·9 mm long with obtuse ciliate lobes about as long as the tube; corolla glabrous, *ca* 2 mm long with ovate lobes 0·4 mm long; stamens *ca* 3 mm long; ovary pubescent. Pods linear, spirally coiled, pubescent, 3·5 cm long, 5 mm wide. Seeds longitudinal, oblong, 3·2 mm long, about twice as long as wide; areole small, closed; oblique fleshy aril almost as long as the seed.

DARLING DOWNS DISTRICT: 10 miles [16 km] NE of Tara, Sep 1966, *Holden;* Karara, 30 miles [48 km] W of Warwick, Nov 1966, *Ward* 332.

In Queensland *A. pravifolia* is restricted to three localities in the south-eastern part of the state where it occurs on shallow sandy soils.

Bentham, in editing Mueller (1859), stated that the species was the same as *A. sublanata,* though he noted that the specimen he had seen was fragmentary and that the bracts described by Mueller were different from those of Bauer's plant (the type of *A. sublanata*). Mueller (1889) treated *A. pravifolia* and *A. sublanata* as distinct. Black (1924) regarded them as conspecific, but later (1948) distinguished *A. pravifolia* from *A. sublanata,* mentioning the pointed bracts of the latter. Black's figure is an excellent representation of the Queensland plant. *A. sublanata* is a north Australian species conspecific with *A. luehmannii.*

134. Acacia amblygona A. Cunn. ex Benth., London J. Bot. 1:332 (1842). **Type:** Native of the high land west of the Macquarie River, *Fraser* (K, lectotypus novus).

A. nernstii F. Muell., Fragm. 4:3 (1863). **Type:** Ipswich, Nerst (K, iso).

A low sprawling shrub; branchlets terete with low ribs, with indumentum of dense or moderately dense stiff, erect, white hairs from 0·2–0·4(–0·6) mm long. Stipules setaceous or linear, occasionally with a few hairs, 1–2 mm long. Phyllodes with indumentum similar to that of branchlets, or occasionally glabrous, sessile, triangular to lanceolate falcate, the lower margin straight or somewhat curved, the upper curved, plurinerved, the lowest parallel to the lower margin and excurrent as a pungent point up to 2 mm long and two others curved and ± running into the dorsal margin, sometimes with an obscure gland at or below the broadest part of the phyllode, 4–11(–16) mm long, 1·6–3·2 (–4·2) mm broad, 2–4·5(–6) times as long as broad. Heads of 20–30 flowers on glabrous peduncles usually shorter than the phyllodes with some brown bracts at the base. Flowers 5–merous; calyx turbinate 0·8–1 mm long divided to $\frac{1}{3}$–$\frac{1}{2}$ or entirely into obtuse ciliate lobes; corolla glabrous 1·6–1·8 mm long divided to $\frac{1}{4}$–$\frac{1}{2}$, lobes, acute glabrous with prominent midrib; ovary glabrous, the style lateral. Pod linear, coiled, glabrous up to 7 cm long, 3–4 mm broad, the valves raised above the seeds and slightly contracted between them. Seeds longitudinal, oblong *ca* 3 mm long, *ca* 2 mm broad with an aril on one side of the seed.

LEICHHARDT DISTRICT: Expedition Range, Between "Bauhinia Downs" and Rolleston, Aug 1966, *Stevenson*. PORT CURTIS DISTRICT: Wowan, Apr 1937, *White* 11025. DARLING DOWNS DISTRICT: Gurulmundi, Sep 1965, *Stevenson;* Goombungee, 27°18′S 151°51′E, *Ward* 295. BURNETT DISTRICT: Eidsvold, Dec 1913, *Bancroft*. WIDE BAY DISTRICT: Bottletree Creek near Rosedale, *White;* Gundiah, Jun 1927, *White* 3498. MORETON DISTRICT: Plunkett, Aug 1923, *White*.

Though the species is widely distributed in south-eastern Queensland as a subshrub in eucalypt open-forest it is nowhere common. It usually occurs on shallow stony soils but is sometimes associated with *Eucalyptus moluccana* on clays. It is likely to be confused only with *A. pravifolia* which has more densely pubescent and less elongate phyllodes. A variant recorded from Chinchilla has branchlets with sparse short (0·1 mm long) hairs.

LYCOPODIIFOLIAE Pedley

Phyllodes small, without definite nerves, terete or slightly flattened, in regular or slightly oblique whorls with prominent stipules between them, stipules sometimes absent. Flowers in heads on axillary peduncles. Type species: *A. lycopodiifolia* A. Cunn. ex Hook.

135. Acacia galioides Benth., London J. Bot. 1:344 (1842); Pedley, Contrib. Qd Herb. 11:14 (1972). **Type:** Australia, *Bauer* (K, holo).

A spreading shrub less than 0·5 m tall; branchlets glabrous, occasionally glaucous or with an indumentum of hairs usually 0·1 mm long rarely up to 0·3 mm long, usually most dense immediately below the whorls of phyllodes. Phyllodes straight or slightly recurved at the apex, sightly flattened with an impressed nerve on the upper surface, obscurely longitudinally ribbed beneath, abruptly contracted into a short apical point up to 0·2 mm long, 2–8 mm long (up to 14 mm on young sterile vigorous shoots, but these seldom collected), (5–)6–9 per whorl; stipules linear, acute, scarious, (0·5–)0·8–3(–4) mm long. Heads 10–20(–25) flowered on peduncles 4–15 mm long, glabrous or with indumentum similar to that of the branchlets; receptacle with a few long hairs; bracteoles somewhat concave, narrow-ovate or lanceolate, acuminate, striate, 0·8–1·6 mm long with a few long hairs on the margin. Flowers striate 5–6–merous; calyx thick, striate, 0·6–1·4 mm long with broadly triangular lobes 0·2–0·3 mm long; corolla 1·5–2·6 mm long with rather thick incurved lobes (0·4–)0·7–0·8(–1) mm long; stamens *ca* 4 mm long; ovary glabrous. Pods somewhat viscid, glabrous, linear, the valves raised over the seeds with nerve-like margins up to 5 cm long, (4–)5–6 mm broad, on stipes 7–10 mm long, seeds longitudinal 3·5–5 mm long, *ca* 3 mm broad with a small cupular aril.

135a. A. galioides var. galioides

Branchlets with an indumentum of moderately dense to dense hairs. Phyllodes with a covering of short (less than 0·1 mm long hairs). Calyx 0·7–0·8 mm long, ± hispid or with hairs confined to the margins. Corolla (1·5–)2–2·2 mm with hispid to almost glabrous lobes.

BURKE DISTRICT: 9 miles [14 km] E of "Riversleigh", Jun 1948, *Perry* 1445. NORTH KENNEDY DISTRICT: 6 miles [10 km] SW of Pentland, Jun 1953, *Lazarides* 3575. SOUTH KENNEDY DISTRICT: "Disney" 90 miles [144 km] NNW of Clermont, Jul 1964, *Pedley* 1723.

135b. A. galioides var. **glabriflora** (Domin) Pedley, Contrib. Qd Herb. 11:15 (1972). Based on *A. glabriflora* Domin, Biblioth. Bot. 89:251 (1926). **Type:** Mt Remarkable apud opp. Pentland, Mar 1910, *Domin* (PR, (holo).

Differs from *A. galioides* var. *galioides* in having glabrous phyllodes, and somewhat more glabrous and sometimes larger flowers. Branchlets with an indumentum of sparse to dense hairs. Phyllodes glabrous or rarely with a few long white hairs. Calyx (0·6–)0·8–1·4 mm long, with a few hairs on the margins. Corolla 1·8–2·2(–2·4) mm long with a few hairs on the margins of the lobes.

BURKE DISTRICT: 11 miles [18 km] SE of "Westmoreland", Jun 1948, *Perry* 1356. COOK DISTRICT: Stannary Hills, Apr 1962, *McKee* 9431. SOUTH KENNEDY DISTRICT: "Yarrowmere", 21°34'S 146°15'E, Apr 1969, *Walker*.

135c. A. galioides var. **leioclada** (Domin) Pedley, Contrib. Qd Herb. 11:15 (1972). Based on *A. leioclada* Domin, Biblioth. Bot. 89:251 (1926). **Type:** Queensland: in collibus apud fl. Walsh River situ septentr. ab opp. Chillagoe, Feb 1910, *Domin* (PR, holo).

Differs from *A. galioides* var. *galioides* in being glabrous and having somewhat larger flowers. Plant (including floral parts) glabrous. Calyx 0·7–1·1 mm long; corolla 2–2·6 mm long.

COOK DISTRICT: Sandy Tate River, Feb 1928, *Brass* 1744. NORTH KENNEDY DISTRICT: Mt Garnet, Oct 1944, *McKellar*.

Acacia galioides occurs on sandy and shallow rocky soils and ranges from the eastern highlands of Queensland, from about Clermont to Herberton, through north-western Queensland and the central part of the Northern Territory to the eastern part of the Kimberley region of Western Australia. *A. galioides* var. *galioides* and *A. galioides* var. *glabriflora* occur throughout the range of the species, but the latter is more common in the eastern part. *A. galioides* var. *leioclada,* on the other hand, is found only in the east. The varieties are not ecologically differentiated to any great extent and one specimen (*Perry* 1356), a mixture of *A. galioides* var. *galioides* and *A. galioides* var. *glabriflora* indicates that more than one variety may occur in a single population.

The indumentum of short hairs (when present) and stipitate pod distinguish the species from all others of the group, and it is difficult to specify its nearest relative, though one specimen suggests a relationship with *A. perryi* from the Northern Territory. Within the species there are gradations in such characters as degree of pubescence and size of flowers but there are no discontinuities sharp enough to admit of recognition of taxa above varietal rank. Despite this, *A. galioides* var. *leioclada* is quite a striking plant because of its lack of indumentum.

136. Acacia asperulacea F. Muell., J. Proc. Linn. Soc. Bot. 3:123 (1859); Pedley, Contrib. Qd Herb. 11:8 (1972). **Type:** Upper Victoria River, Arnhem Land, *Mueller* 73 partim (MEL, holo).

A. galioides Benth. var. *asperulacea* (F. Muell.) Domin, Biblioth. Bot. 86:252 (1926). Based on *A. asperulacea.*

A. lycopodiifolia A. Cunn. ex Hook. var. *glabrescens* Benth., Fl. Austr. 2:342 (1864). Based on *A. asperulacea.*

A shrub up to about 1 m tall, branchlets somewhat resinous, glabrous or with an indumentum of rather sparse somewhat retrorse lax hairs 0·4 mm long, the internodes often long, up to 3 times as long as the phyllodes. Phyllodes ascending, straight or recurved at the apex, slightly flattened with an impressed nerve on the upper surface, produced into a point *ca* 0·4 mm long, glabrous or with scattered hairs 0·2 mm long, 6–11(–13) mm long, (8–)10–14 per whorl; stipules setaceous, glabrous, up to 2 mm, rarely 2·5 mm long. Heads 15–30 flowered on peduncles 10–25 mm long with indumentum similar to that of the branchlets; receptacle glabrous or with a few hairs; bracteoles linear up to 2 mm long. Flowers striate 5–6 merous; calyx (similar to that of *A. perryi*) glabrous, ribbed, 0·6–0·9 mm long, with thick linear incurved lobes 0·2–0·4 mm long; corolla striate, rather thick, 1·8–2·2 mm long with thick incurved lobes 0·6–1 mm long, sparsely hispid on the back; stamens *ca* 4 mm long; pistil glabrous. Pods linear, sessile or on stipes up to 5 mm long, glabrous, 3·5 cm long, *ca* 6 mm broad, raised along the middle with slightly thickened margins; seeds longitudinal.

BURKE DISTRICT: "Lawn Hill", May 1940, *Jensen* 86; 14 miles [22 km] SW of "Kamilaroi", Aug 1953, *Lazarides* 3972.

Acacia asperulacea occurs on shallow stony soil in the western part of Burke District and adjacent parts of the Northern Territory. The affinities and rank of the taxon have been in question since Mueller described it. Bentham regarded it as a variety of *A. lycopodiifolia* and Domin referred it to *A. galioides.*

137. Acacia chippendalei Pedley, Contrib. Qd Herb. 11:12 (1972). **Type:** Northern Territory; 17 miles [27 km] W of "Rockhampton Downs" T.O., Aug 1955, *Chippendale* NT 1532 (BRI, holo; CANB, NT, PERTH, iso).

A spreading shrub usually less than 0.5 m tall but up to 3 m; branchlets terete, covered with sparse or dense, ± erect, white hairs 0·3–0·6 mm long. Phyllodes ascending, ± straight or slightly recurved at the apex, slightly flattened, with an obscure longitudinal impressed nerve above and an oblique setaceous point up to 0·2 mm long, clothed with moderately dense, ± straight hairs 0·2–0·3 mm long, arranged in whorls of 8–11; stipules setaceous 0·4–1(–1·4) mm long. Heads (10–)20–25 flowered borne on peduncles 4–13 mm long with indumentum similar to that of the branchlets; receptacle with hairs 0·3 mm long between the flowers; bracteoles lanceolate, concave, acuminate, 1·2–2 mm long, glabrous or with few long hairs. Flowers 5–merous; calyx obconical, obscurely longitudinally nerved, 0·6–1 mm long, with ovate or oblong, obtuse, acute or sometimes acuminate lobes, (0·2–)0·3–0·4 mm long, rather broad (at the base 0·3–0·4 mm) and with a few marginal hairs (0·2 mm long); corolla longitudinally ribbed, rather thick, 1·3–2(–2·4) mm long, with few long hairs in the upper part and with lobes 0·5–0·8 mm long. Pods linear, sessile, sometimes a little contracted between the seeds, 7 cm long, 6–7 mm broad, with glabrous, glutinous valves somewhat thickened at the margin, rather convex along the middle. Seeds 3·5–4 mm long, *ca* 2·5 mm wide, with a small aril, arranged longitudinally or slightly obliquely.

BURKE DISTRICT: 17 miles [27 km] from Mt Isa on Camooweal Road, May 1963, *Gittins* 753.

Acacia chippendalei occurs in the Cloncurry—Mt Isa area, adjacent parts of the Northern Territory and extends to Western Australia. It is found on both shallow stony soils and on deep sand, often of lateritic origin.

Sterile specimens of *A. chippendalei* often cannot be distinguished with certainty from *A. adoxa,* a species that occurs in the Northern Territory and in Western Australia but the arrangement of the seeds, and the ribbing and lobing of the calyx differentiate the two.

138. Acacia baueri Benth., London J. Bot. 1:344 (1842); Pedley, Contrib. Qd Herb. 11:9 (1972). **Type:** Australia, *Bauer* (K, holo).

An erect shrub less than 0·5 m tall; branchlets terete, glabrous or with an indumentum of sparse to moderately dense antrorse white hairs 0·4 mm long, sometimes tuberculate. Phyllodes straight or recurved in the upper half, or only at the apex, mucronate, slightly laterally compressed with an obscure longitudinal nerve on each side, glabrous or occasionally tuberculate or with scattered white hairs similar to those of the branchlets, 7–16 mm long, 6–8(–9) per whorl, very rarely scattered; petioles 0·4–0·6 mm long; stipules up to 0·8 mm long, often absent. Heads 10–15 flowered, on peduncles 2–15 mm long; the receptacle pubescent; bracteoles linear-lanceolate, concave, acute, *ca* 1 mm long with a

few hairs. Flowers not striate, 5–merous; calyx 0·7–1·1 mm long with rather thick lobes 0·25–0·5 mm long, glabrous or fringed with hairs; corolla 1–1·6 mm long, glabrous, with lobes *ca* 0·3–0·5 mm long; ovary glabrous, with a few appressed white hairs or densely pubescent. Pod linear, sessile up to 2·5 cm long, 2–3 mm broad, glabrous or with extremely sparse appressed hairs mainly at the base. Seeds longitudinal, ± cylindric, 4–5·5 mm long, 2–2·5 mm broad the funicle folded and thickened into a cupular aril.

WIDE BAY DISTRICT: Fraser I., Oct 1930, *Hubbard* 4632. MORETON DISTRICT: Hollywell near Southport, Dec 1966, *Pedley* 2178.

Acacia baueri occurs on infertile, often seasonally waterlogged sands in coastal heath (wallum) from Fraser Island to Botany Bay. It is not a common plant and is in danger of extinction in the extreme south-east of Queensland. Only *A. baueri* subsp. *baueri* occurs in Queensland. *A. baueri* subsp. *aspera* is more or less confined to the Blue Mountains, N.S.W. *A. baueri* is not closely related to the tropical species of the group of section *Lycopodiifoliae*. The compression rather that depression of its phyllodes and its frequent lack of stipules suggest some affinity with *A. brunioides* and more remotely with *A. conferta,* both of section *Phyllodineae*.

139. Acacia spondylophylla F. Muell., Fragm. 8:243 (1874); Pedley, Contrib. Qd Herb. 11:22 (1972). **Lectotype:** Central Australia, without definite locality, *Stuart* (MEL).

A spreading shrub up to about 2 m tall with smooth, grey bark, branchlets resinous with indumentum of moderately dense stiff white hairs 0·4 mm long, and internodes usually shorter than the phyllodes. Phyllodes straight or somewhat recurved towards the apex, slightly flattened with an obscure impressed nerve on the upper surface, obscurely longitudinally ribbed when dry, with a short apical mucro, (5–)6–10 mm long, less than 1 mm broad, 8–12(–14) per whorl; stipules brown, resinous, uninerved, 1–2 mm broad, up to 0·5 mm broad. Heads 25–40 flowered on resinous sparsely pilose peduncles 10–25 mm long; bracteoles oblong to ovate, acute or acuminate 1–2 mm long, 3–4 times as long as broad. Flowers 5–merous; calyx glabrous, membranous, 0·8–1·2 mm long (with acute or obtuse lobes (0·4–)0·5–0·7(–0·9) mm long, corolla (1·6–)1·8–2·2(–2·3) mm long with lobes (0·4–)0·6–1·0 mm long, glabrous or sometimes with a few hairs on the back of the lobes, not striate but the lobes uninerved; stamens *ca* 3·5 mm long; ovary glabrous. Pods resinous flat, the valves rather papery with nerve-like margins, concave over the seeds, 4 cm long, 6–8 mm broad. Seeds transverse, 3·5–4 mm long, 2–3 mm broad with a cupular aril.

GREGORY NORTH DISTRICT: 70 miles [112 km] E of Urandangie, May 1966, *Pedley* 2026.

Acacia spondylophylla occurs on shallow, sandy or stony soil and extends from broken country near Dajarra in Queensland to the Macdonnell and Musgrave Ranges in the Northern Territory with a large gap to the Hamersley Range in Western Australia. The species is a well-marked one. Bentham (Fl. Aust. 2:342. 1864) noted it under *A. hippuroides,* but Mueller recognised its separateness. He discussed and figured it well.

140. Acacia longipedunculata Pedley, Contrib. Qd Herb. 11:17 (1972). **Type:** Cook District: Stannary Hills, June 1962, *Gittins* 518 (BRI, holo).

Missapplied name: *A. hippuroides* auct. non Benth.; Maiden, Proc. Roy. Soc. Qd 30:25 (1918).

Small shrub; branchlets terete, somewhat resinous, covered with sparse white hairs *ca* 1 mm long. Phyllodes ± terete in whorls of 15–27, abruptly contracted at the top into a mucro 1–1·5 mm long, gently incurved from the base, 1–2·5 cm long; stipules brown, setaceous, 1–2 mm long. Heads slightly elongate, of 25–40 flowers on axillary resinous peduncles 1·5–4·5 cm long, usually much longer than the phyllodes. Flowers 5–merous; calyx 1·2 mm long with acute or acuminate lobes 0·4–0·6 mm long with a few extremely sparse long hairs on the back; corolla 2–2·5 mm long with lobes 0·8–1 mm long with a few extremely sparse long hairs on the back; stamens *ca* 4 mm long; ovary glabrous. Pod linear, glabrous, up to 4 cm long, 6–8 mm wide, slightly raised along the middle. Seeds longitudinal, depressed globular, 4 mm long, 3–4 mm wide; aril on one side at base.

COOK DISTRICT: Irvinebank, *Bennett.* NORTH KENNEDY DISTRICT: Paluma Range, on Ewan road, Mar 1968, *Wyatt* 18.

A. longipedunculata is restricted to shallow stony soils in north-eastern Queensland.

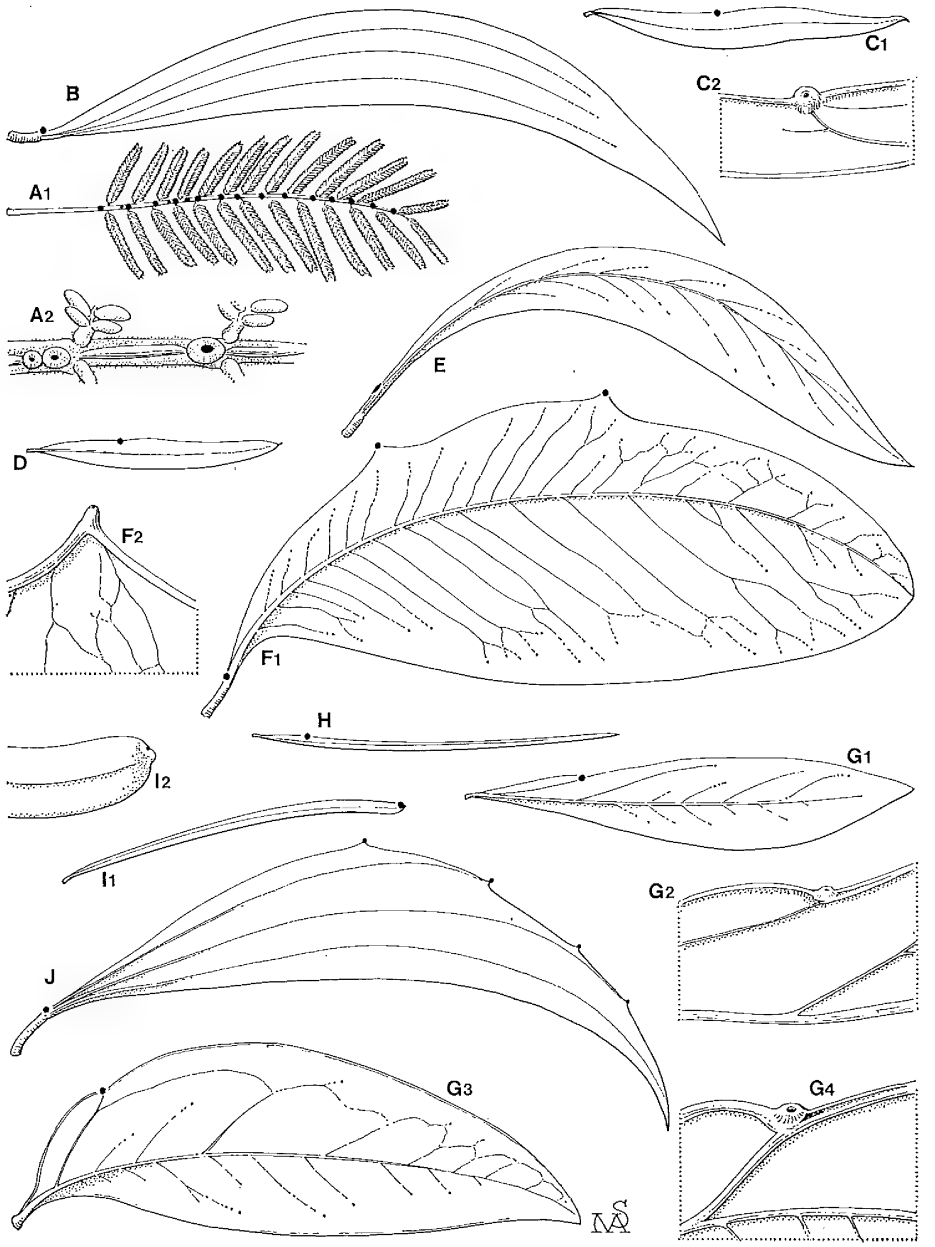

Figure 7. Glands: position on leaf indicated. **A.** A. loroloba (living material ex Botanic Gardens, Brisbane). **B.** A. concurrens (*Pedley* 891) **C.** A. pustula, pustulate gland (*Surtees* 4). **D.** A. polifolia (*Boorman* s.n.). **E.** A. falcata (*Hubbard* 3302). **F.** A. bancroftii (*Moriarty* 191). **G.** A. penninervis (G1, 2: *Hubbard* 4043; G3, 4: *Pedley* 4454). **H.** A. perangusta (*White* 6286). **I.** A. hockingsii (*Pedley* 2792). **J.** A. flavescens (*Clemens* s.n.). A2, C2, F2, G2, G4, I2, × 4; others × 2/3.

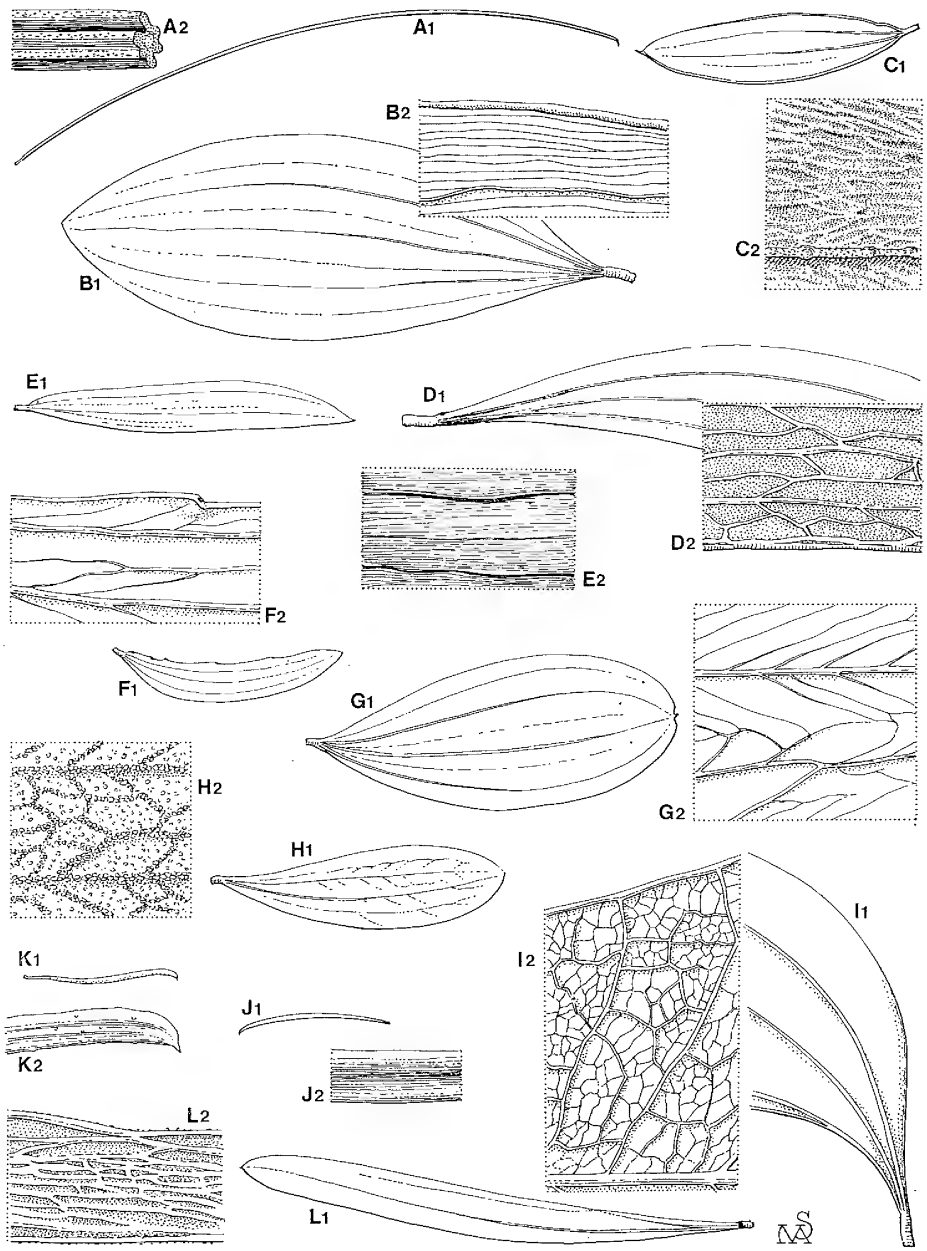

Figure 8. Nervature of phyllodes **A.** A. jackesiana *(Jackes* s.n.). **B.** A. striatifolia *(Coveny* 6821 & *Hind*). **C.** A. stipuligera (*Cockburn* s.n.) **D.** A. oligophleba (*Pedley* 4098). **E.** A. melvillei (*Hockings* s.n.). **F.** A. multisiliqua (*Brass* 8839). **G.** A. fleckeri *(Coveny* 7082 & *Hind).* **H.** A. dictyophleba *(Cockburn* s.n.) **I.** A. leptoloba (*T. J. Macdonald* 1620 & *Batianoff*). **J.** A. burbidgeae (*Smith* 6423). **K.** A. johnsonii (*J. & M. Simmons* s.n.) **L.** A. stricta (*Pedley* 1479). A2, B2, C, × 4; others × 2/3.

Figure 9. Inflorescences. **A.** *A.* ulicifolia *var.* brownei (*Stevenson* s.n.) **B.** A. hubbardiana (*Tindale* 688). **C.** A. falcata (*W. J. Macdonald* 1032). **D.** A. fasciculifera (*Williams* s.n.). **E.** A. harpophylla (*Durrington* 757). **F.** A. legnota (*Blake* 23314). **G.** A. nupperima *subsp.* cassitera *(Stirling* s.n.). **H.** A. brevifolia *(Adams* 1243). **I.** A. caroleae (*T. J. Macdonald* 257). **J.** A. crassicarpa *(Hoogland* 8522). All × 1.

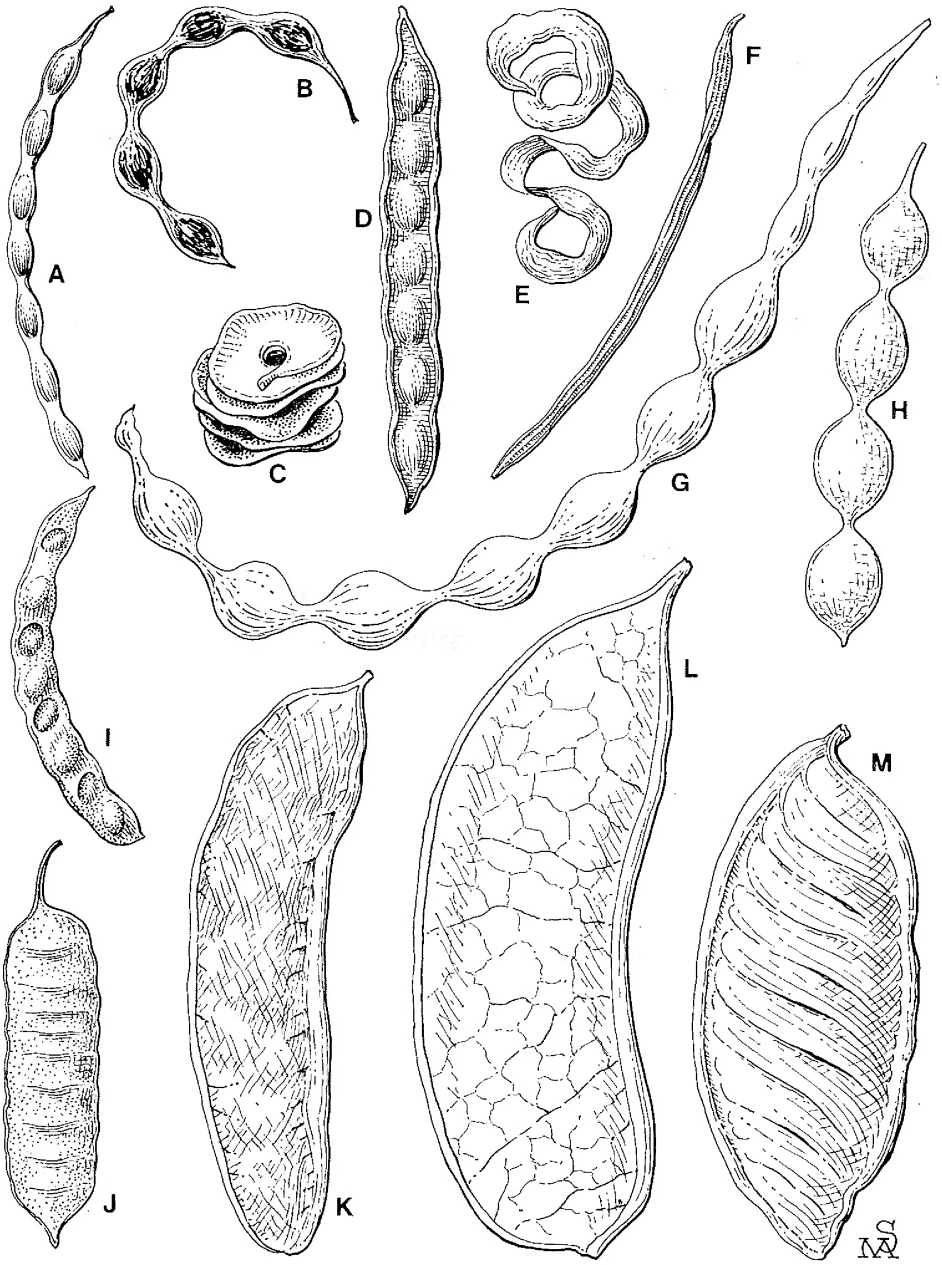

Figure 10. Pods. **A.** A. longispicata (*White* 12351). **B.** A. tetragonophylla (*Everist* 5753). **C.** A. cincinnata (*Francis* s.n.). **D.** A. whitei (*Staples* 250474/18). **E.** A. solandri (*White* 10138). **F.** A. julifera (*Bancroft* s.n.). **G.** A. coriacea (*Trapnell* E61). **H.** A. stenophylla (*Ebersohn* E264). **I.** A. aprepta (*Pedley* 917). **J.** A. conferta (*Speck* 1897). **K.** A. pendula (*White* 12349). **L.** A. platycarpa (*Smith & Everist* 957). **M.** A. crassicarpa (*Smith* 12346).

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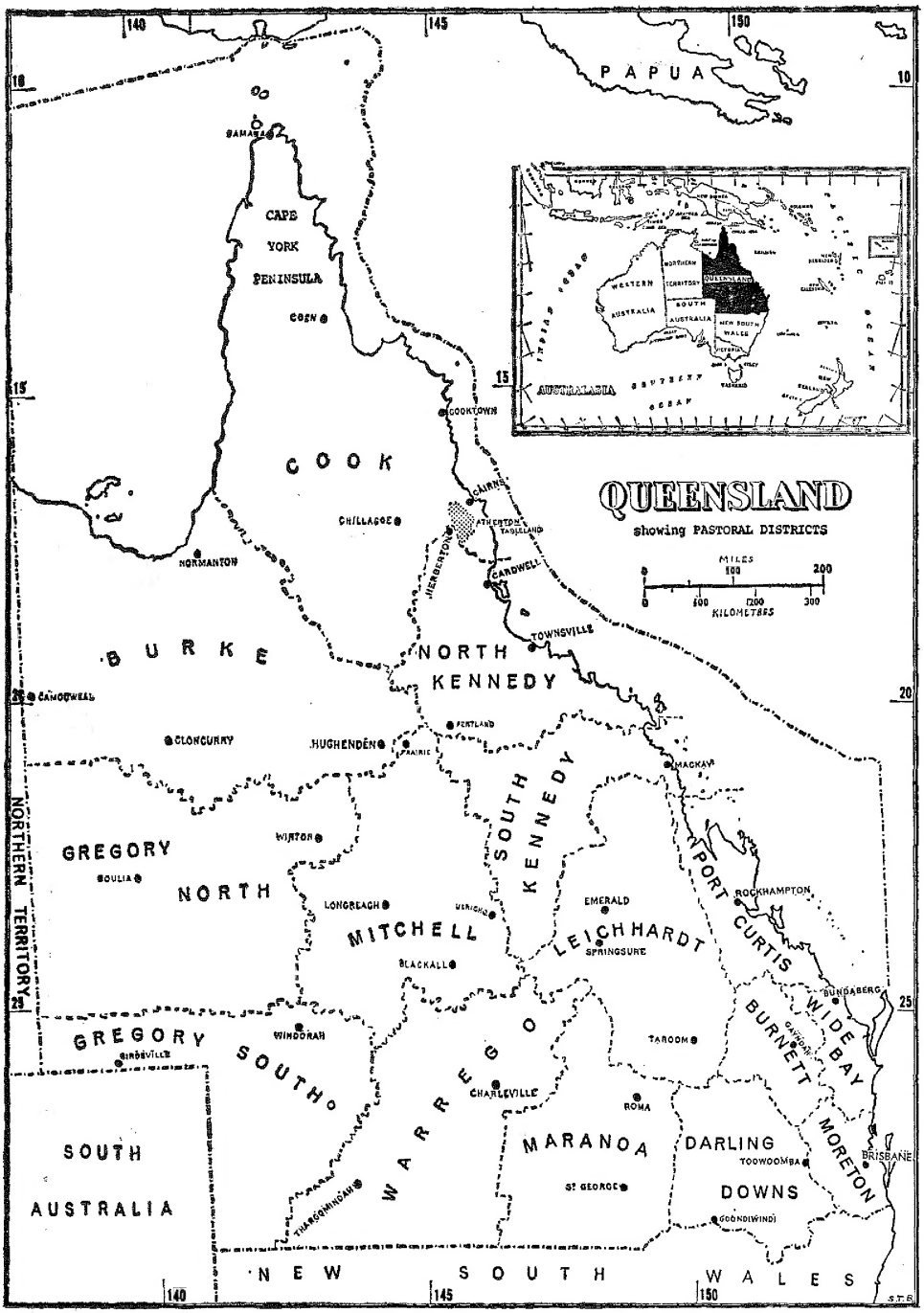

In the citation of specimens from Queensland, the localities are grouped according to the Pastoral Districts shown above. The boundaries of these Districts mostly follow watersheds except for those between North Kennedy District and South Kennedy District and between Gregory North District and Gregory South District.

Compiled from maps issued by the Survey Office, Department of Lands, Brisbane; based on State Map 4a.

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